

**ENVIRONMENTAL ASSESSMENT
DEVILS LAKE EMBANKMENT RAISE – PHASE I
DEVILS LAKE, NORTH DAKOTA**

**U.S ARMY CORPS OF ENGINEERS
ST. PAUL DISTRICT**

SEPTEMBER 2009

**Environmental Assessment
Devils Lake Embankment Raise – Phase I
Devils Lake, North Dakota**

1.00 SUMMARY

Devils Lake is a closed basin that has a history of widely fluctuating lake levels. First recorded measurements began in the late 1800's. The lake elevation was as low as 1400.9 (feet msl NGVD29) in 1940 and reached its peak-recorded elevation of 1450.8 in July 2009. If the lake reaches elevation 1459, it will overtop the high point between the lake and Tolna Coulee and flow down the coulee to the Sheyenne River.

Initial embankments to protect the City of Devils Lake were constructed in the 1980's to an elevation of 1445 under the Corps of Engineers' Section 205 program. Since 1996, the embankments have been raised/extended three times, due to rising lake levels, at a total cost of \$53 million. In 1996 embankments were raised to 1450, again in 1997 to 1457, with the most recent raise completed in 2007 with a top of embankment elevation of 1460 under the authority of Public Law 84-99. The current embankment system is about 8 miles in length along the west, south and east side of the city.

Since the lake has continued to rise, additional protection is required to maintain flood protection for the City of Devils Lake. The project would consist of upgrading the existing embankment system to provide long-term emergency protection for the City of Devils Lake up to elevation 1460 (top of embankment elevation of 1465) with the ability to raise the embankments to a final elevation of 1469 if needed. While the final design and alignment of the embankment raise and extension have not been fully developed, because of the current lake elevation it has been determined that construction to increase the embankment height on an 8,800 foot reach of the existing embankment in Creel Bay should be initiated as soon as possible.

This environmental assessment addresses the potential effects associated only with improvement of the 8,800 foot reach of the Creel Bay portion of the existing embankment system. An environmental assessment addressing the effects of the overall project will be prepared and distributed for public review as soon as the alignment and design criteria for the remaining reaches are determined.

An environmental review of the proposed action indicates the project would not result in significant effects on the environment. The probable effects in the area would be minor and short-term. Therefore, an Environmental Impact Statement will not be prepared.

The selected plan involves the placement of fill in waters of the United States. Specifically, material needs to be placed in Devils Lake to construct a cofferdam, and the existing ponding area for the Creel Bay pump station needs to be filled as the embankment toe is extended landward. A Section 404(b)(1) evaluation of fill activities is attached to this report. State water quality

certification has been obtained. Water quality impacts would be minimized by instituting best management practices during the construction and removal of the cofferdam and embankment construction.

RELATIONSHIP TO ENVIRONMENTAL REQUIREMENTS

The proposed action would comply with Federal environmental laws, executive orders, and policies, including the Clean Air Act, as amended; the Clean Water Act of 1977; the Endangered Species Act of 1973, as amended; the National Environmental Policy Act, as amended; the Land and Water Conservation Fund Act of 1965, as amended; the National Historic Preservation Act of 1966, as amended; the Fish and Wildlife Coordination Act of 1958, as amended; Executive Order 11988, Floodplain Management; and Executive Order 11990, Protection of Wetlands. The project would not result in the conversion of agricultural lands to non-agricultural purposes. Therefore, the provisions of the Farmland Protection Policy Act of 1981 do not apply. The embankment raise project is in compliance with all Federal and State laws and policies.

2.00 NEED FOR AND OBJECTIVES OF ACTION

Devils Lake is a closed basin that has a history of widely fluctuating lake levels. First recorded measurements began in the late 1800's. The lake elevation was as low as 1400.9 in 1940 and reached its peak-recorded elevation of 1450.8 in July 2009. If the lake reaches elevation 1459, it will overtop the high point between the lake and Tolna Coulee and flow down the coulee to the Sheyenne River.

Many initiatives have been undertaken in the basin to mitigate for rising lake levels including: numerous road raises; relocation of affected structures; the construction of embankments at the City of Devils Lake; buyouts of some affected property owners; implementation of a Basin Water Management Plan developed by the Devils Lake Joint Board to improve watershed management in the upper basin; wetland restoration through a variety of agency programs; an experimental irrigation program; and the construction of an outlet from the West Bay of Devils Lake to the Sheyenne River. Some of these efforts have had limited success due to lack of participation, funding constraints or operational constraints.

Initial embankments to protect the City of Devils Lake were constructed in the 1980's to an elevation of 1445 under the Corps of Engineers' Section 205 program. Since 1996, the embankments have been raised/extended three times, due to rising lake levels, at a total cost of \$53 million. In 1996 embankments were raised to 1450, again in 1997 to 1457, with the most recent raise completed in 2007 with a top of embankment elevation of 1460. The current embankment system is about 8 miles in length along the west, south and east side of the city.

Studies have shown that the climate condition affecting the lake is currently in a "wet state", causing Devils Lake to rise. Geological studies have shown that Devils Lake has spilled to Stump Lake at least five times and reached the natural spill elevation to the Sheyenne River twice in the past 2,500 years. Regardless of the water management measures implemented in the upper basin, or the size of the outlet constructed to the Sheyenne River, Devils Lake could continue to rise

and eventually overflow from the east end down Tolna Coulee, as identified to have occurred during pre-settlement conditions. While the current probabilities are low, the possibility of such conditions recurring still exists.

The existing embankment system at the City of Devils Lake has a top elevation of 1460. If embankments were going to be retained as the primary approach to reducing flood risk at the City of Devils Lake, due to the length and magnitude of earthwork that would be involved with another embankment raise construction needs to be initiated several years before the lake reaches an elevation where the existing embankments would no longer meet the Corps design criteria for free board and wave run-up.

Since the lake has continued to rise, additional protection is required to maintain flood protection for the City of Devils Lake. The project would consist of upgrading the existing embankment system to provide long-term emergency protection for the City of Devils Lake up to elevation 1460 (top of embankment elevation of 1465) with the ability to raise the embankments to a final elevation of 1469 if needed. While the final design and alignment of the embankment raise and extension have not been fully developed, because of the current lake elevation it has been determined that construction to increase the embankment height on an 8,800 foot reach of the existing embankment in Creel Bay should be initiated as soon as possible (see attachment 1). This reach of the existing embankment system is most susceptible to wave run-up and involves the construction of a new pump station.

The purpose of the larger embankment improvement project is to provide long-term flood risk management to the City of Devils Lake. The immediate work that is proposed is to ensure that one of the most critical reaches of the embankment system can be raised in a timely manner in response to the continued rise of Devils Lake.

The authority for this project is in Public Law 84-99, Flood and Coastal Storm Emergencies (33 U.S.C. 701n) (69 Stat. 186).

3.00 ALTERNATIVES

Given the history of the water level fluctuations of Devils Lake, alternative approaches to instituting another round of embankment raises were evaluated. Other approaches considered included upper basin storage, lowering the natural outlet elevation at Tolna Coulee, relocation of the City of Devils Lake and the combination of embankment raise/relocations. An alternatives screening document was prepared and presented to the public in 2008 (attachment 2). The alternative of a combination of an embankment raise and relocation of structures as needed is being evaluated in the other phases of the overall embankment project. As described in attachment 2, upper basin storage, lowering the natural outlet elevation at Tolna Coulee and relocation of the City of Devils Lake were screened from detailed evaluation because they were either environmentally more damaging, were not responsive to preventing the need for another embankment raise or were significantly more costly.

Design and construction of the embankment raise in this limited portion of Creel Bay is an

independent feature. The immediate raise of this portion of the existing embankment would have no effect on alignment alternatives or design criteria being considered for other reaches of the overall embankment study. The only remaining alternative considered to the proposed embankment raise in this reach of Creel Bay is No Action.

NO ACTION

No Action assumes that no additional actions are taken by the Corps of Engineers to raise the existing embankment system at Devils Lake. It includes those actions expected to be undertaken in the future in the absence of a Corps project. Good indicators of expected future actions are those actions taken in the past. If Devils Lake continues to rise, it is assumed that some actions would be taken in an effort to maintain the level of protection afforded by the existing embankment system. It is possible that a limited raise of 1 or 2 feet of the existing embankment system could be implemented without increasing the footprint or extending the existing embankments. Such an approach may require accepting some compromises in standard design criteria for embankments and may result in a structure with more inherent risk of failure. Other selective infrastructure protection measures, such as raising roads, may also be implemented. If Devils Lake continued to rise once a limited raise of the embankments was completed, some portions of the City of Devils Lake may be relocated due to safety concerns.

Because of the increased risk to public health and safety that could occur if the lake continues to rise, the No Action alternative was not selected.

PREFERRED ALTERNATIVE

The preferred alternative would consist of approximately 8,800 feet of embankment raise and consist of clay fill, a sand drain, and riprap and bedding. It would also include the replacement of the Creel Bay pump station and Eagle Bend pump station with one pump station at Creel Bay (100,000 gpm capacity). The embankment would be raised 5 feet to a top of embankment elevation of 1465 msl, with the toe of embankment being extended between 85-150 feet landward, depending on location. A new inlet channel and holding pond would be constructed for the new Creel Bay pump station and the existing channel abandoned. The interior drainage for the abandoned Eagle Bend pump station would be routed to the new larger Creel Bay pump station. The only fill being placed in the water or a wetland would be the cofferdam needed in Devils Lake to allow for the construction of the new pump station outlet, the gateway outlet apron and the filling of a portion of the holding pond for the old Creel Bay pump station as the toe of the embankment is extended landward. Four potential borrow sites have been identified to immediately to the north and west of construction area. Potential borrow locations, general plan views and typical x-sections for the embankment raise and the new pump station are presented in attachment 1.

It is anticipated at this time that the remainder of the project would be constructed in two additional phases and would include raising the remaining 6.5 miles of existing embankment 5

feet, the construction of an additional 5 miles of embankment to tie into high ground, and the construction of several new pump stations. The embankment extension alignments, design criteria or borrow areas not been determined. An Environmental Assessment for the overall embankment improvement project will be prepared once these items are determined.

4.00 AFFECTED ENVIRONMENT

The 3,700-square-mile Devils Lake basin is a closed basin (from which no water has flowed out in historic times) in northeast central North Dakota. Surficial deposits in the Devils Lake region are entirely glacial drift, ranging from 10 to 400 feet thick. The glacial till is predominantly ground-up Pierre shale and limestone. Many pothole depressions dot the landscape. Post-glacial lacustrine deposits of sand, silt, clay, and gravel form the bed of the Devils Lake system.

Satellite imagery analysis of land use reveals that about 70 percent of the basin is cultivated land, 8 percent grassland, 3 percent woodland, 16 percent water, and 3 percent miscellaneous area.

Forested areas are mainly in the south-central portion of the basin along the shore of Devils Lake and in the Devils Lake Indian Reservation. Although most of the other land is cultivated, the richest soils are in the central and northern parts of the basin. Pasture and rangeland are more common in the southern portion of the subbasin near the lake.

The City of Devils Lake is located in Ramsey County, which has about 80 percent of its land devoted to agricultural uses. The land use characteristics of Ramsey County are shown in the following table.

2003 Land Use Characteristics of Ramsey County, North Dakota

<u>Land Use</u>	<u>Acres</u>	<u>Percent</u>
Cropland	490,133	59
Pasture/grassland	94,467	11
Water	103,828	12
Wetland	105,961	13
Urban	34,710	4
Woodland	5,984	1
Total	835,085	100

Land use in the immediate project reach consists of existing grassed levee, and pasture. The inlet channel and holding ponds for the Creel Bay and Eagle Bend pump stations are the only water features on the landward side of the embankments.

NATURAL RESOURCES

The immediate project area is hayland/pasture, with open water and emergent vegetation being present in the inlet channel and holding ponds. The rising level of Devils Lake has encroached into the project area in some locations. The pastureland is vegetated with milkweed, buffaloberry,

sagebrush, Canada thistle, foxtail barley, curly dock, buckbrush, sunflower, and various grasses and sedges. Alkaligrass. Curly dock, kockia, prairie cordgrass and other grasses and sedges may be present in wet areas along the toe of the embankment.

The wildlife value of the immediate project area is rather limited because of the urban and agricultural surroundings. Common species that may be present in the area include white-tailed deer, fox, raccoon and ring-necked pheasant. Other species of birds and mammals that use Devils Lake and the surrounding habitat include: pelicans, cormorants, gulls, herons, muskrat, mink, beaver, skunk, badger, and weasel. Numerous waterfowl species may be seen in or near Creel Bay during migration.

The fishery of Devils Lake is highly valued and is an important economic resource that greatly improved during the 1980s with rising water levels. Game species are by far dominant from West Bay to East Devils Lake. Important species include yellow perch, walleye, white bass, crappie, and northern pike. Reproduction appears to be limited to the west end of the lake due to total dissolved solids concentrations. With current high lake levels yellow perch, northern pike, white bass and crappie are experiencing successful natural reproduction. Routine stocking by the North Dakota State Game and Fish Department has continued since it first began in 1965. The abundant benthic invertebrates in the lake are excellent forage and are collected and planted in other lakes of the State.

Four potential upland borrow areas have been identified. The U.S. Fish and Wildlife Service has wetland easements on one of the sites and a portion of a second site.

Threatened and Endangered Species: Devils Lake is within the migratory range of one endangered species and within the breeding range of a threatened species. The endangered migrating species is the whooping crane (*Grus americana*). Devils Lake is within the breeding range of the piping plover (*Charadrius melodus*), a threatened species. While these species may be found in the Devils Lake basin, no critical habitat is known to exist for either of these species in the immediate project area.

SOCIAL RESOURCES

Within the City of Devils Lake, the most recent growth has occurred to the southwest. Zoning ordinances are in effect for the area between the city and the lake that restrict building below elevation 1460.0 feet. Both the City of Devils Lake and Creel Township enforce this. Surrounding counties (Benson, Eddy, and Nelson) also have adopted building restrictions as part of an emergency plan in reaction to the rising lake level.

Although farm employment has decreased during recent years, farming is still the most important industry in the Devils Lake basin economy. In 2007, farm employment comprised 14.8 % of total employment in the four-county area compared with 7.4% for the state and 1.6% for the U.S. as a whole. The decrease in farm employment is partially offset by increasing employment in other industries. Other important industries include retail trade, services, and government. Between 1980

and 2000, total employment in the basin increased from 14,860 to 15,223, an increase of 2.4 percent.

Unemployment in the basin averaged 4.5 percent in 2008. Employment is high during the spring, summer, and fall, which encompass the construction and agricultural seasons. During the winter, many agricultural and construction activities decrease drastically, increasing unemployment.

Total personal income for the basin in 2000 was \$536 million. Farm earnings accounted for 8.6 percent of total industry earnings, which is slightly higher than the State's 7.8 percent. The annual per capita income for the basin in 2000 ranged from \$16,877 in Benson County to \$23,310 in Ramsey County. Per capita income on the Devils Lake Sioux Reservation was significantly lower at \$5,165. The average per capita annual income in North Dakota in 2000 was \$25,105.

From 1980 to 2000, the City of Devils Lake and the surrounding rural communities experienced declines in population to varying degrees (see the following table). None of the counties in the watershed experienced population growth.

The Spirit Lake Reservation is the home of the Spirit Lake Sioux and occupies a total of 244,000 acres. The total Indian population on the reservation was estimated at 6,223 in 2005. This represents growth of 74.1 percent since 1990 when population was 3,574.

Population in and around Devils Lake, North Dakota, 1980-2000

	<u>1980</u>	<u>2000</u>	<u>% Change</u>
<u>Watershed Counties</u>			
Benson	7,944	6,964	-12.3
Eddy	3,554	2,757	-22.4
Nelson	5,233	3,715	-29.0
Ramsey	13,048	12,066	-7.5
Total	29,779	25,502	-14.4

Cities near Devils Lake (counties in parentheses)

Devils Lake City (Ramsey)	7,442	7,222	-3.0
Lakota (Nelson)	963	781	-18.9
Fort Totten (Benson)	1,141	952	-16.6
Minnewaukan (Benson)	461	318	-31.0
Starkweather (Ramsey)	210	157	-25.2
Leeds (Benson)	678	464	-31.6
New Rockford (Eddy)	1,791	1,463	-18.3

Watershed Perimeter Cities (counties in parentheses)

Langdon (Cavalier)	2,335	2,101	-10.0
Cooperstown (Griggs)	1,368	1,053	-23.0
Carrington (Foster)	2,641	2,268	-14.1

Devils Lake is the most important water-based recreation area in eastern North Dakota. Fishing and other water-oriented activities provide a major economic resource for the local economy and are very important to the overall well being of the area. Devils Lake and the surrounding area is also one of the best waterfowl hunting areas in the State and is a valuable economic asset to the local economy. A boat landing, parking area and fish cleaning station is located on the embankment in the vicinity of the Creek Bay pump station.

CULTURAL RESOURCES

No National Register of Historic Places eligible or listed historic properties will be affected by raising the existing City of Devils Lake embankment at Creel Bay where Phase 1 construction is to take place. Five previous cultural resources surveys have been conducted in this area: Area 1 was studied in Dahlberg et al., 1983, *Archeological and Historic Cultural Resources Inventory for a Proposed Flood Control Project at Devils Lake, Ramsey County, North Dakota*; the proposed embankment segment in the north half of section 5 was studied in Larson, 1996, *Results of a Phase I Cultural Resources Investigation for the Proposed Devils Lake Levee Raise, Tie Back Levee Work, and Potential Borrow Areas, Ramsey County, North Dakota*; survey areas 2, 3 and 4 were studied in Kinney, 1996, *Results of the Class III Cultural Resource Inventory of Six Proposed Borrow Areas for the Devils Lake Levee Raise*; Site 6 on the landward side of the existing embankment was studied in Kinney, 1997, *Six Proposed Levee Sites for the Devils Lake Levee Raise, Phase 1: A Class III Cultural Resource Inventory of Sites 1 Through 6*; and Area B was studied in Kinney, 1997, *Three Proposed Borrow Areas for the Devils Lake Levee Raise: A Class III Cultural Resource Inventory Report*. No cultural resources were encountered in the Devils Lake Flood Risk Management Project's Phase 1 construction area during any of these surveys.

A Phase I cultural resources investigation of four potential borrow areas was completed in June 2009. Three isolated finds consisting of one fist-sized tested chalcedony cobble (32RYx52) and two projectile points made of Knife River flint (32RYx53, 32RY54) were located in three of the borrow areas. None of these three artifacts are recommended as eligible to the National Register of Historic Places.

5.00 ENVIRONMENTAL EFFECTS

An environmental analysis has been conducted for the proposed action, and a discussion of the impacts is presented in the following paragraphs. In accordance with Section 122 of the 1970 Rivers and Harbors Act, the parameters listed in Table 1 have been reviewed and considered in arriving at the final determination. As waters of the United States will be filled as a part of the project, a Section 404(b)(1) evaluation was prepared (attachment 3). Application was made to the State of North Dakota regarding water quality certification under Section 401 of the Clean Water Act. Water quality certification was obtained on 5 August 2009.

Table 1: Environmental Assessment Matrix

PARAMETER	No Action Alternative							Preferred Alternative						
	BENEFICIAL			NO EFFECT	ADVERSE			BENEFICIAL			NO EFFECT	ADVERSE		
	SIGNIFICANT	SUBSTANTIAL	MINOR		MINOR	SUBSTANTIAL	SIGNIFICANT	SIGNIFICANT	SUBSTANTIAL	MINOR		MINOR	SUBSTANTIAL	SIGNIFICANT
A. SOCIAL EFFECTS														
1. Noise Levels				X								T		
2. Aesthetic Values				X							X			
3. Recreational Opportunities				X								T		
4. Transportation				X								T		
5. Public Health and Safety				X							X			
6. Community Cohesion (Sense of Unity)				X							X			
7. Community Growth and Development				X							X			
8. Business and Home Relocations				X							X			
9. Existing/Potential Land Use				X							X			
10. Controversy				X								X		
B. ECONOMIC EFFECTS														
1. Property Values				X							X			
2. Tax Revenue				X							X			
3. Public Facilities and Services				X							X			
4. Regional Growth				X							X			
5. Employment				X							X			
6. Business Activity				X							X			
7. Farmland/Food Supply				X							X			
8. Commercial Navigation				X							X			
9. Flooding Effects				X							X			
10. Energy Needs and Resources				X							X			
C. NATURAL RESOURCE EFFECTS														
1. Air Quality				X								T		
2. Terrestrial Habitat				X							X			
3. Wetlands				X							X			
4. Aquatic Habitat				X							X			
5. Habitat Diversity and Interspersion				X							X			
6. Biological Productivity				X							X			
7. Surface Water Quality				X							X			
8. Water Supply				X							X			
9. Groundwater				X							X			
10. Soils				X							X			
11. Threatened or Endangered Species				X							X			
D. CULTURAL RESOURCE EFFECTS														
1. Historic Architectural Values				X							X			
2. Prehistoric & Historic Archeological Values				X							X			

T: Temporary Effect

NATURAL RESOURCES

Embankment construction would primarily affect pasture land, the majority of which was disturbed with the last embankment raise. The biggest change would be the conversion of up to 30 acres of pasture land to grassed embankment as a result of the extension of the toe of the embankment landward. An additional 50 feet landward from the toe, approximately 10 acres, would be maintained in grasses to allow for inspection for seepage. The net effect would be a slight decrease in woody vegetation in the immediate project area with no appreciable effect on wildlife in the area.

The potential borrow areas are upland sites. The topsoil would be stripped and replaced following excavation. Depending on the final disposition of the site, the areas would be reseeded or returned to pre-project conditions. The U.S. Fish and Wildlife Service has wetland easements on one of the sites and a portion of a second site; however these areas are not wetland. Use to these borrow sites would be coordinated with the U.S. Fish and Wildlife Service to ensure that the easements are not adversely affected.

The embankment raise would have no effect on any listed federally listed threatened or endangered species.

The construction equipment may have a temporary minor impact on air quality.

Best management practices would limit erosion during construction to maintain water quality. Construction of the gateway/apron for the new Creel Bay pump station would require the construction of a cofferdam. Details of the cofferdam are not known at this time as it would be designed by the contractor selected for construction of the project. It is possible that an earth cofferdam would be constructed, although a sheet pile cellular structure is more likely. Best management practices would be used to minimize water quality effects in Devils Lake during construction of the cofferdam.

The ponding area at the old Creel Bay pump station would be filled as the toe of the embankment is extended landward. Limited wetlands with aquatic habitat that was created when the ponding area was initially created would be affected. These wetlands and associated aquatic habitat will be replaced with the construction of the slightly larger ponding area associated with the new pumping station.

SOCIAL RESOURCES

As a single feature, the embankment raise along a limited portion of Creel Bay would have no appreciable effect on aesthetics, community cohesion, community growth, regional growth, relocations, potential land use, property values, tax revenues, employment, business activity, farmland and food supply, energy needs and resources, water supply or flooding effects. No minority or low income populations would be disproportionately affected by the proposed action.

Construction equipment would generate some noise. However, no sensitive receptors (such as hospitals or schools) are in the affected area, so the construction noise would have no appreciable effect. Construction could begin as early as October 2009, but will likely not be initiated until April 2010. Construction should be completed by October 2010.

Construction would also disrupt traffic patterns. There would be equipment in the area causing lower speed limits and possibly causing lanes to be closed. There may be instances when road closures would be necessary. Any impacts to traffic would be temporary.

The boat ramp located near the Creel Bay pump station could be closed for up to 1 year once construction is initiated, resulting in temporary adverse effects on recreational opportunities. Boat ramps on other parts of Devils Lake would have to be used in the interim. The plan would not result in any permanent impacts to recreation opportunities.

While there would be no immediate public health and safety effects with the proposed embankment raise along Creel Bay, initiating construction now allows for improvements to a portion of the existing embankment system that is most susceptible to wave run-up, and it will allow for the timely completion of an overall embankment project should the lake continue to rise. Similarly, the embankment raise along Creel Bay would have no immediate effect on flooding, property values, public services, or other factors that may benefit from full implementation of all three phases of the improved flood protection project.

There are several areas of controversy regarding potential alignments for the remainder of the overall project, especially in the Lakewood addition. A potential for controversy also exists regarding allocation of local costs.

CULTURAL RESOURCES

As of July 13, 2009, there are no National Register of Historic Places eligible or listed historic properties in or immediately adjacent to the Devils Lake Flood Risk Management Project Phase 1 construction area. The existing embankment in the Phase 1 construction area was previously surveyed for cultural resources during five cultural resources investigations in 1981 to 1997. No cultural resources were encountered in the area during those investigations. The North Dakota State Historic Preservation Office (SHPO) has concurred that no additional survey of the Phase 1 construction area is warranted and that there will be no effect on historic properties from Phase 1 construction to raise the existing embankment at Creel Bay and construction of a new Creel Bay pump station (SHPO letter dated April 21, 2009).

The June 2009 cultural resources investigation of four potential borrow areas for Phase 1 construction resulted in locating three isolated prehistoric artifacts (32RYx52, 32RYx53, 32RYx54), which are recommended as not eligible to the National Register. The North Dakota SHPO concurred with the determination that these artifacts are not eligible and that use of any or all of these four borrows areas will have no affect on historic properties.

CUMULATIVE EFFECTS

Because of the rising lake levels, other construction is occurring in the Devils Lake area. This includes road raises, protection of individual features and relocation of structures. The completion of the overall embankment raise at Devils Lake would contribute to these cumulative effects in that they are additive. Raising the existing embankment along this limited portion of Creel Bay would have negligible contributions to the cumulative effects.

Executive Order 11988 - Floodplain Management – Raising the existing embankment in this reach of Creel Bay would not encourage additional development in the floodplain. Current floodplain Zoning restricts building below elevation 1460 msl.

The cumulative effects of the overall embankment raise/extension project will be discussed in subsequent NEPA documents once a preferred alignment and design criteria are established.

6.00 COORDINATION

Planning for the overall project has been coordinated with the public, State and Federal agencies, and other interested parties. Several public meetings have been held in and around Devils Lake, North Dakota, to discuss alternatives, embankment alignments and effects of rising lake levels on communities around the lake. The views expressed by the public and agencies have been considered throughout project planning.

The U.S. Fish and Wildlife Service has indicated that the use of borrow sites on lands that also contain USFWS wetland easements would require additional coordination with the Devils Lake Wetlands office prior to excavation. This requirement has been included in the specifications for the project. No other concerns have been identified with the Phase I embankment raise.

The Corps has coordinated with the North Dakota State Historic Preservation Officer regarding the embankment raise and use of the potential borrow areas. The SHPO concurred with the determination that there would be no effect on historic properties from Phase I construction to raise the existing embankment at Creel Bay and construction of a new Creel Bay pump station, and concurred that use of any or all of the four borrow areas will have no effect on historic properties.

The Environmental Assessment was sent to interested citizens and the following agencies:

Federal

Environmental Protection Agency
Federal Emergency Management Agency
U.S. Fish and Wildlife Service
U.S. Geological Survey

Natural Resources Conservation Service

Tribes

Mandan, Hidatsa and Arikara Nation
Turtle Mountain Band of Chippewa
Spirit Lake Tribal Council

State of North Dakota

State Water Commission
State Archaeologist
State Historic Preservation Officer
Department of Health
Department of Game and Fish
Highway Department

Others

City Engineer – Devils Lake
City Commission – Devils Lake
Devils Lake Historic Preservation Commission
Ramsey County Commissioner
Ramsey County Emergency Manager
Devils Lake Public Library

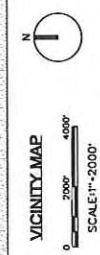
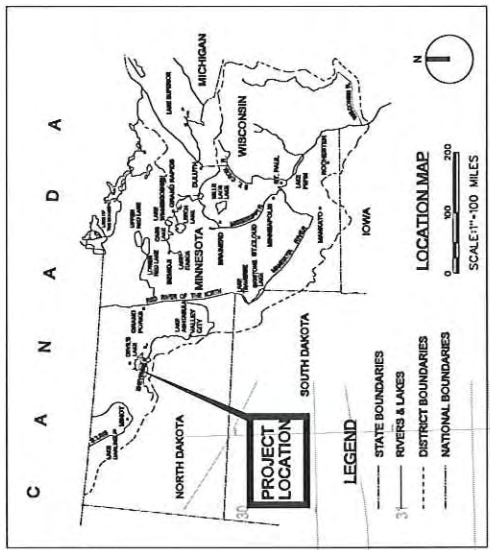
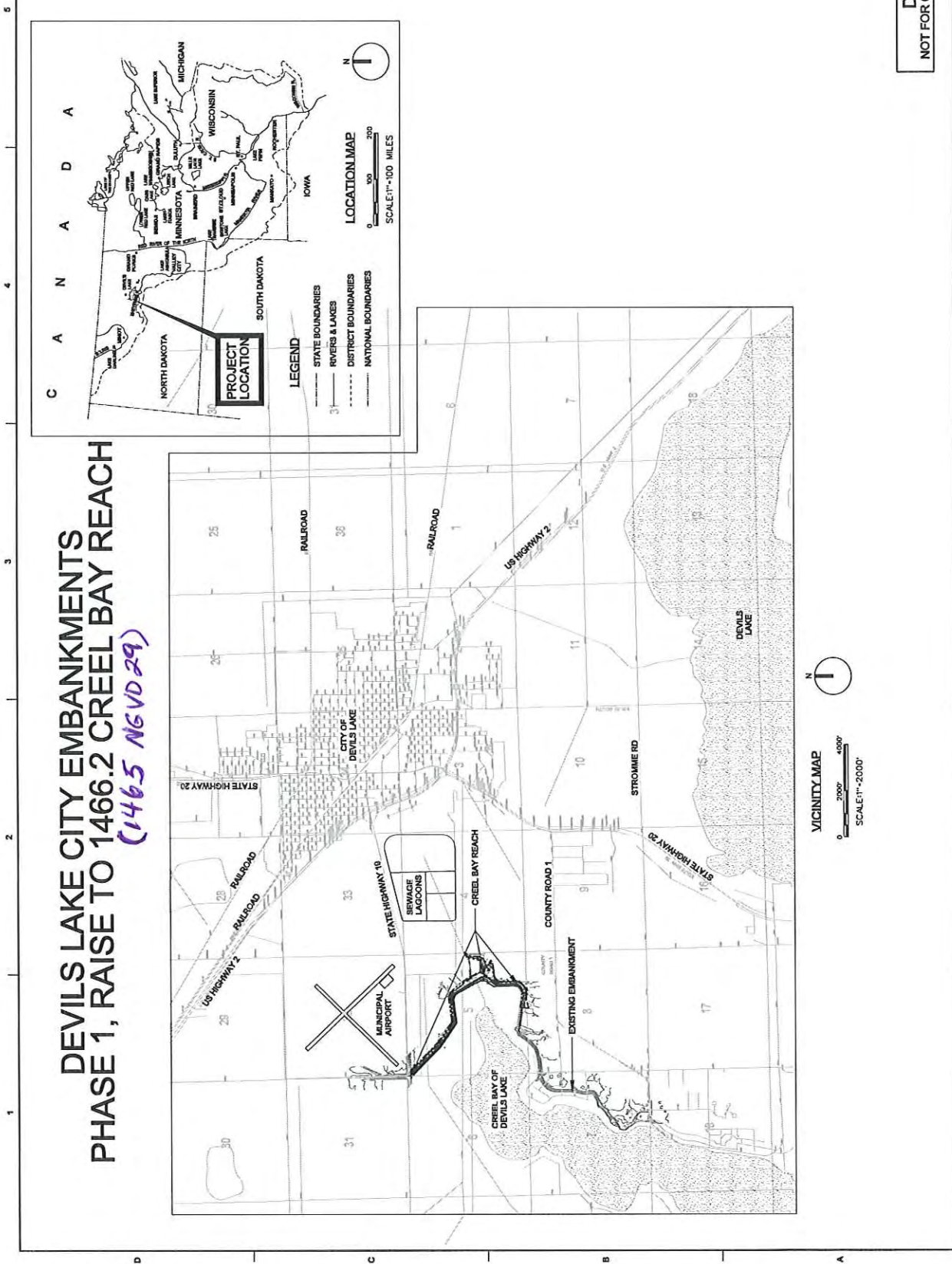
ATTACHMENT 1

EMBANKMENT LOCATION

BORROW SITE LOCATION

GENERAL PLAN VIEWS AND CROSS SECTIONS

DEVILS LAKE CITY EMBANKMENTS PHASE 1, RAISE TO 1466.2 CREEL BAY REACH (1465 NGVD 29)

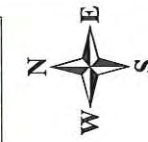


DRAFT
NOT FOR CONSTRUCTION

BERGMANN, JV U.S. ARMY CORPS OF ENGINEERS ST. PAUL DISTRICT ST. PAUL, MINNESOTA PROJECT NO. 1466.2 DRAWING NO. 1466.2-1 DATE 10/1/00		GENERAL LOCATION MAP & VICINITY MAP DEVILS LAKE FLOOD RISK MANAGEMENT PHASE 1, RAISE TO 1466.2 CREEL BAY REACH	SHEET IDENTIFICATION G-002
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DATE	DESCRIPTION	BY	CHKD BY	APP'D BY
10/1/00	DESIGNED			
	CHECKED			
	APPROVED			

DATE	DESCRIPTION	BY	CHKD BY	APP'D BY
10/1/00	DESIGNED			
	CHECKED			
	APPROVED			



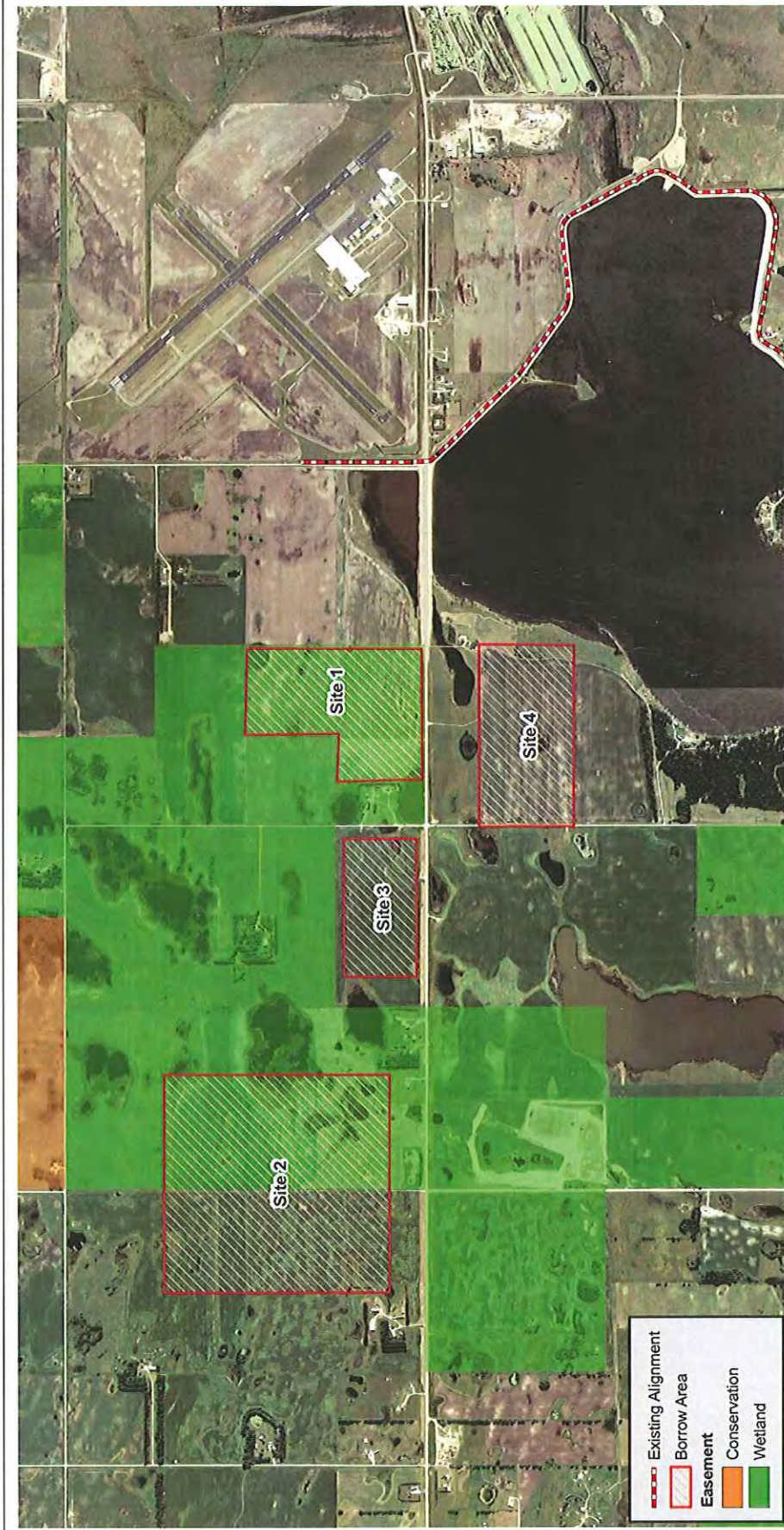
Phase 1 - Embankment Raise
City of Devils Lake, North Dakota



Image Data: FSA County Mosaic - 2003

US Army Corps of Engineers
 St. Paul District
 GIS CENTER

\\msdlnv\proj\PROJECTS\FCE\Devils_Lake_Flood_Risk_Mgmt_Proj-147045\GIS\MXD\Phase_1_Embankment_Raise_MRW_20080715



Proposed Borrow Sites

City of Devils Lake, North Dakota



Image Date: FSA County Mosaic - 2003


 J. Paul District
 GIS CENTER
 US Army Corps
 of Engineers

\\usd\\mvp\\PROJECTS\\FCCE\\Devils_Lk_Flood_Risk_Mgmt_Proj\\147045\\GIS\\MXD\\Borrow_Areas_MRW_20090424

DATE	DESCRIPTION	BY	CHKD BY

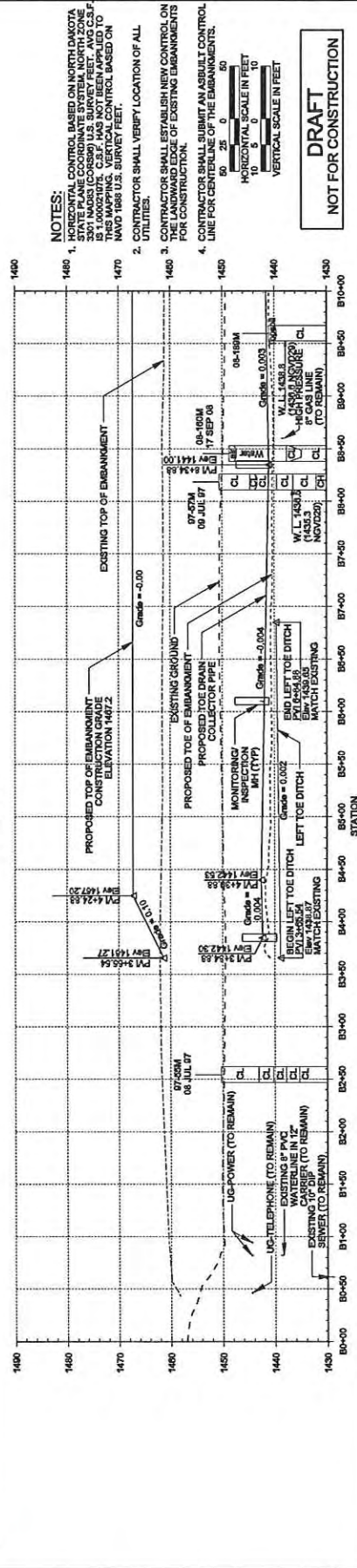
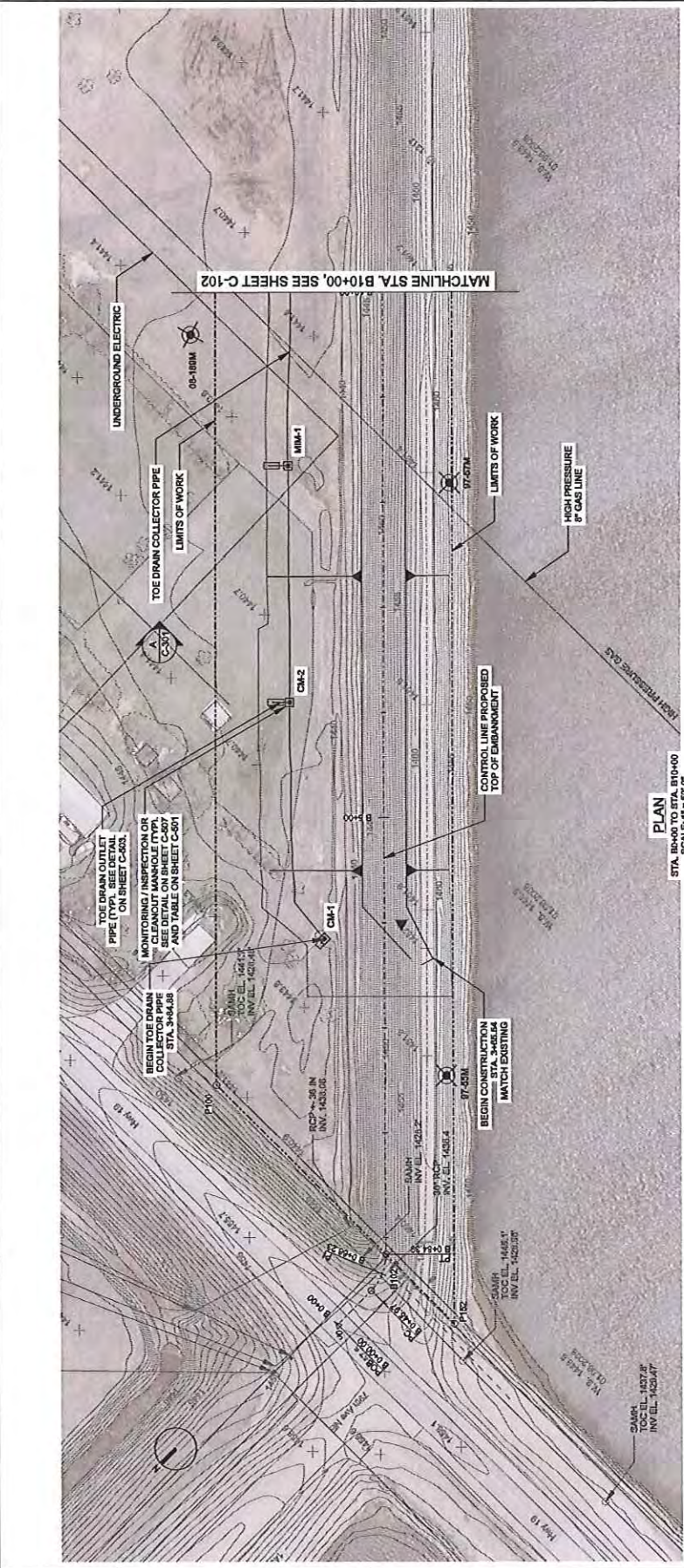
DATE	DESCRIPTION	BY	CHKD BY

DATE	DESCRIPTION	BY	CHKD BY

BERGMANN, JV
ST. PAUL DISTRICT
U.S. ARMY CORPS OF ENGINEERS

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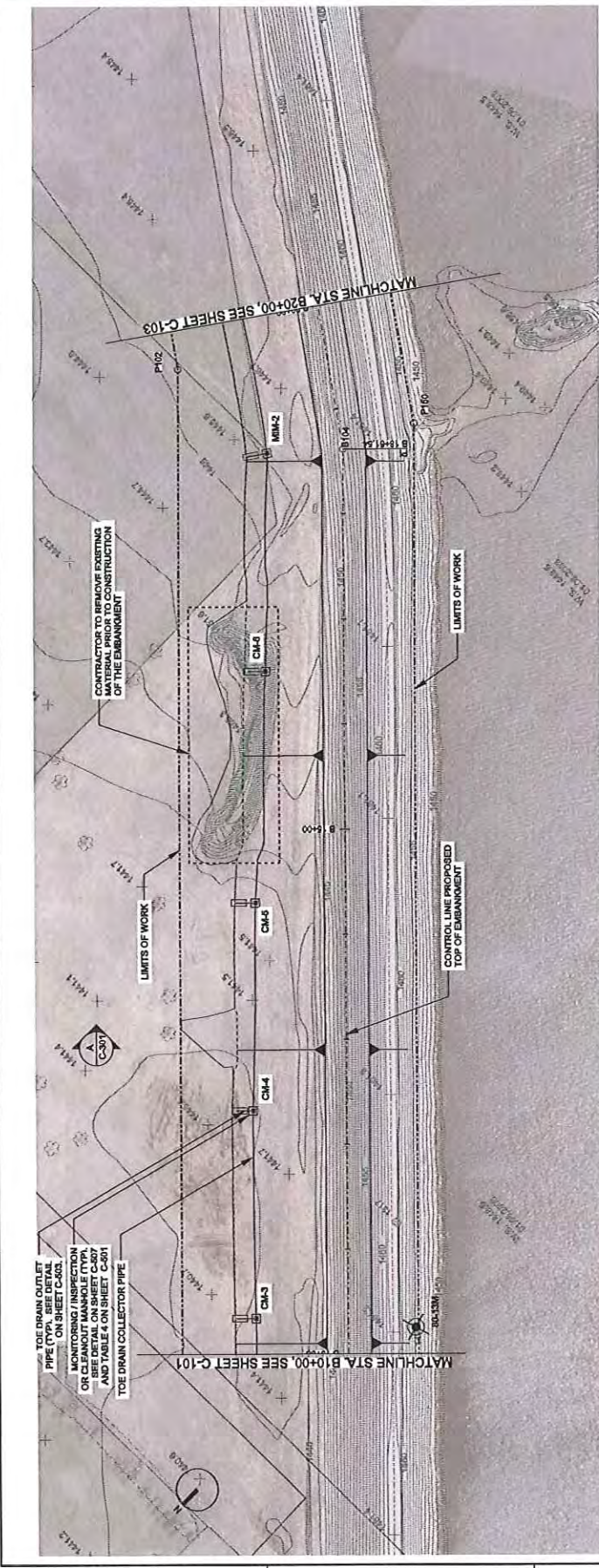


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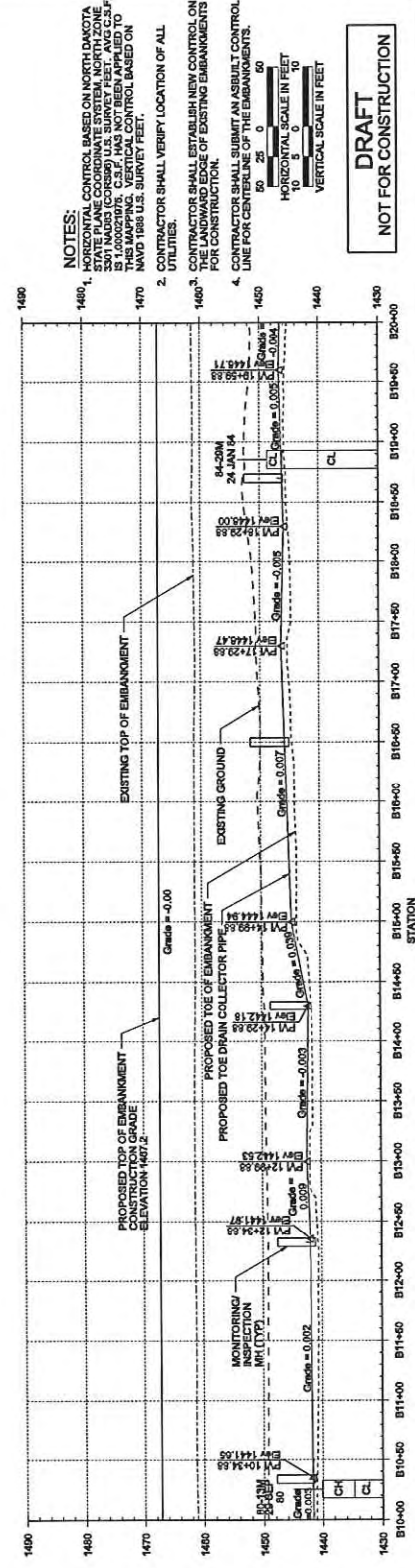
- HORIZONTAL CONTROL BASED ON NORTH DAKOTA STATE PLANE COORDINATE SYSTEM. NORTH ZONE. THIS MAPPING, VERTICAL CONTROL BASED ON NAVD 1988 U.S. SURVEY FEET.
- CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES.
- CONTRACTOR SHALL ESTABLISH NEW CONTROL ON EXISTING TOP OF EMBANKMENT FOR CONSTRUCTION.
- CONTRACTOR SHALL SUBMIT AN AS-BUILT CONTROL LINE FOR CENTERLINE OF THE EMBANKMENTS.

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U.S. Army Corps of Engineers Corps of Engineers District Office St. Paul, Minnesota		PROJECT NO. 100-1000 CONTRACT NO. 100-1000 DRAWING NO. 100-1000		DATE 10/1/00 BY J. HANSON, JR. CHECKED BY J. HANSON, JR.	
PROJECT NAME PROJECT LOCATION PROJECT DESCRIPTION		PROJECT NO. 100-1000 CONTRACT NO. 100-1000 DRAWING NO. 100-1000		DATE 10/1/00 BY J. HANSON, JR. CHECKED BY J. HANSON, JR.	



PLAN
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SCALE 1" = 50'-0"

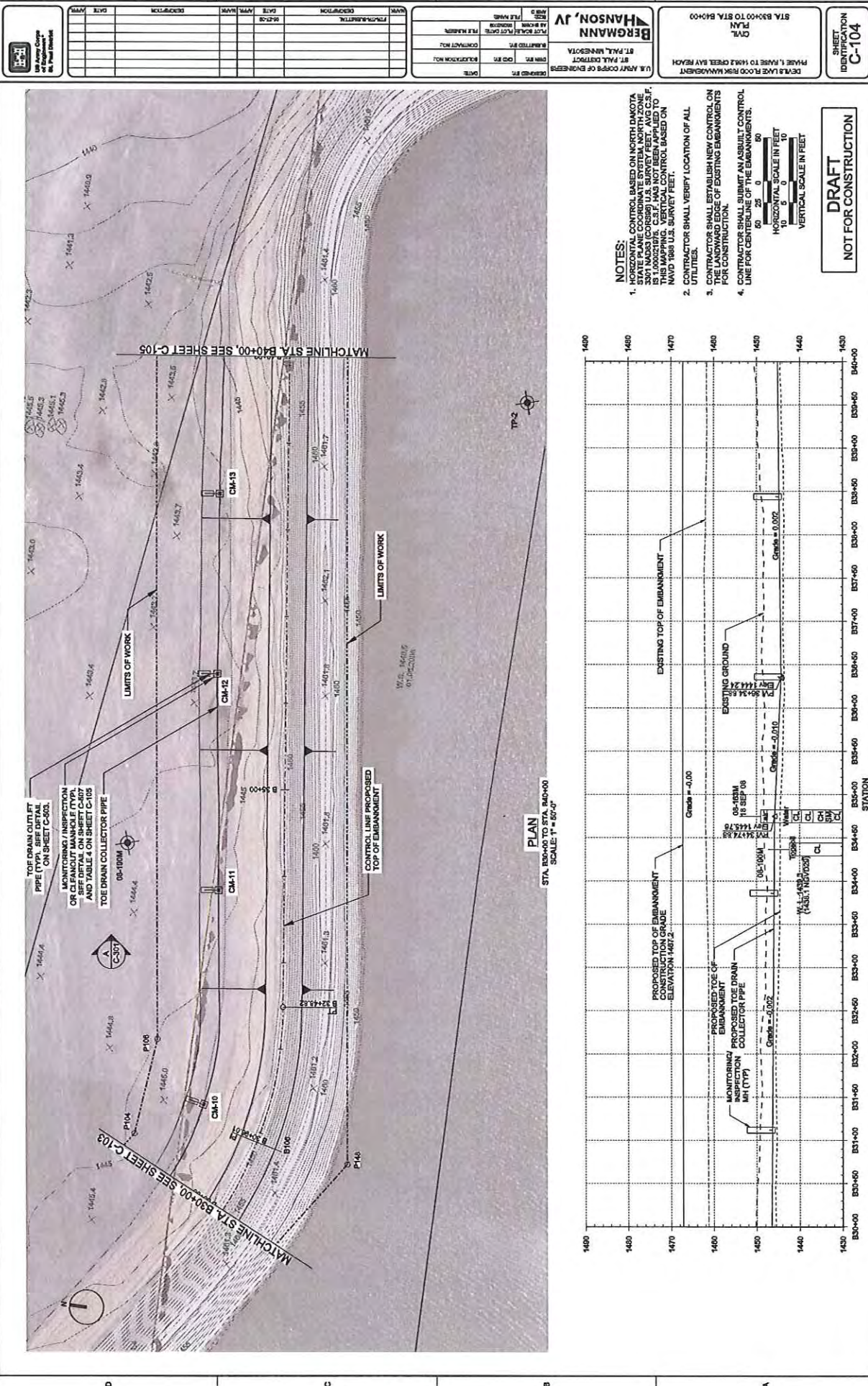


- NOTES:**
- HORIZONTAL CONTROL BASED ON NORTH DAKOTA STATE PLANE COORDINATE SYSTEM. VERTICAL CONTROL BASED ON NGVD 1988 U.S. SURVEY FEET.
 - CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES.
 - CONTRACTOR SHALL RE-EVALUATE NEW CONTROL ON EXISTING EMBANKMENT FOR CONSTRUCTION.
 - CONTRACTOR SHALL SUBMIT AN AS-BUILT CONTROL LINE FOR CENTERLINE OF THE EMBANKMENTS.

DRAFT
NOT FOR CONSTRUCTION

SHEET IDENTIFICATION
C-102

DEVELOP LANE FLOOR PLAN MANAGEMENT
STA. B10+00 TO STA. B20+00
PLAN
CIVIL
ST. PAUL, MINNESOTA
U.S. ARMY CORPS OF ENGINEERS



BERGMANN, J.V.
U.S. ARMY CORPS OF ENGINEERS
ST. PAUL DISTRICT
ST. PAUL, MINNESOTA

PROJECT NO. 62-1-100
CONTRACT NO. 62-1-100
SECTION NO. 62-1-100

DATE: 10/1/62
BY: J.V. BERGMANN
CHECKED: J.V. BERGMANN
APPROVED: J.V. BERGMANN

PLAN
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SCALE: 1" = 40'-0"

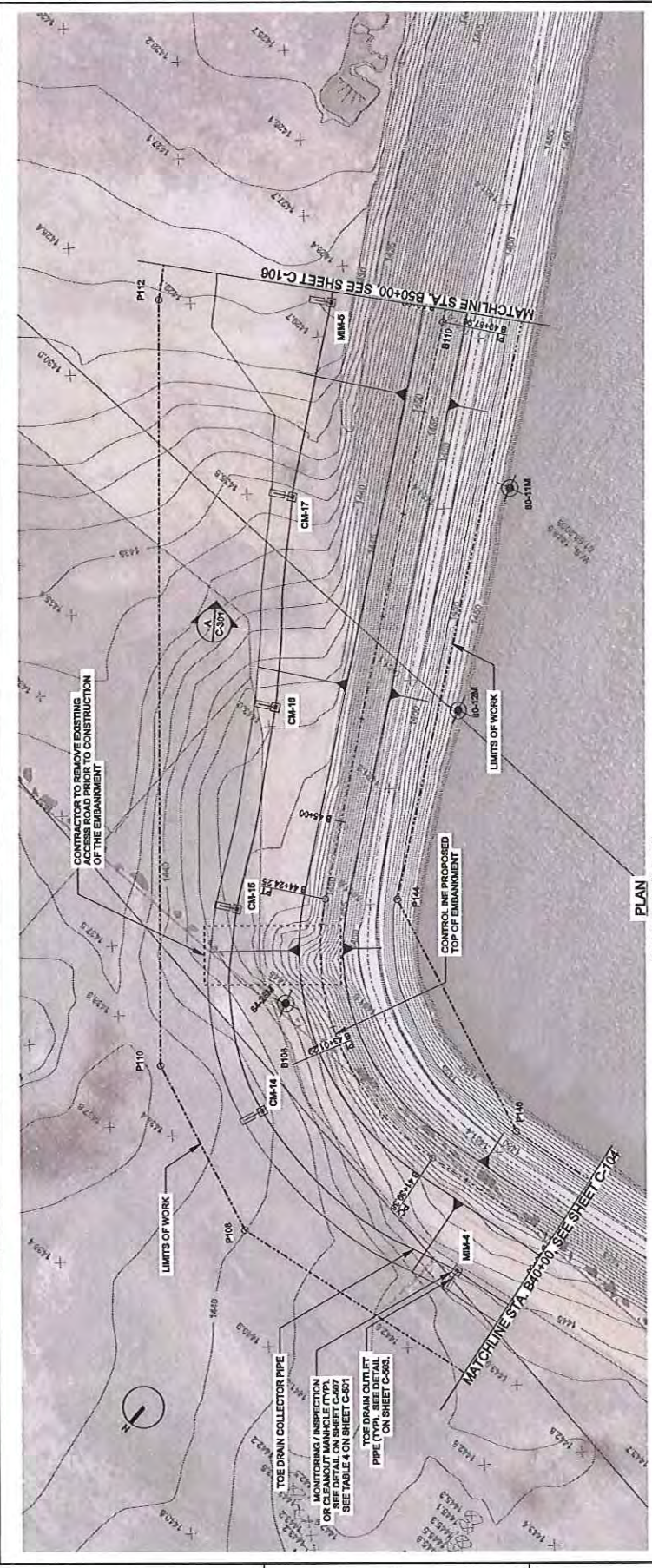
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SCALE: 1" = 40'-0"

NOTES:

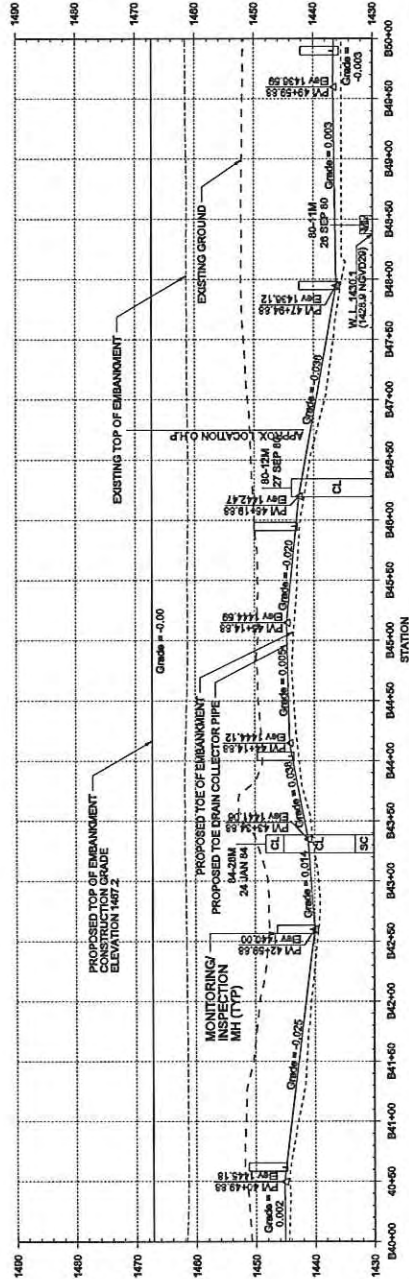
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- CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES.
- CONTRACTOR SHALL ESTABLISH NEW CONTROL ON EXISTING EMBANKMENT FOR CONSTRUCTION.
- CONTRACTOR SHALL SUBMIT AN ASSESSMENT CONTROL LINE FOR CENTERLINE OF THE EMBANKMENT.

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NOT FOR CONSTRUCTION

		BERGMANN, JV ST. PAUL, MINNESOTA U.S. ARMY CORPS OF ENGINEERS ST. PAUL DISTRICT		STA. B50+00 TO STA. B50+00 CUL PHASE 1, RISE TO 144.2 GREEN EAV REACH		SHEET DESIGNATION C-105	
DATE	08/27/03	DESCRIPTION	CONTRACT NO.	CONTRACT NO.	CONTRACT NO.	CONTRACT NO.	CONTRACT NO.
DATE	08/27/03	DESCRIPTION	CONTRACT NO.	CONTRACT NO.	CONTRACT NO.	CONTRACT NO.	CONTRACT NO.
DATE	08/27/03	DESCRIPTION	CONTRACT NO.	CONTRACT NO.	CONTRACT NO.	CONTRACT NO.	CONTRACT NO.
DATE	08/27/03	DESCRIPTION	CONTRACT NO.	CONTRACT NO.	CONTRACT NO.	CONTRACT NO.	CONTRACT NO.



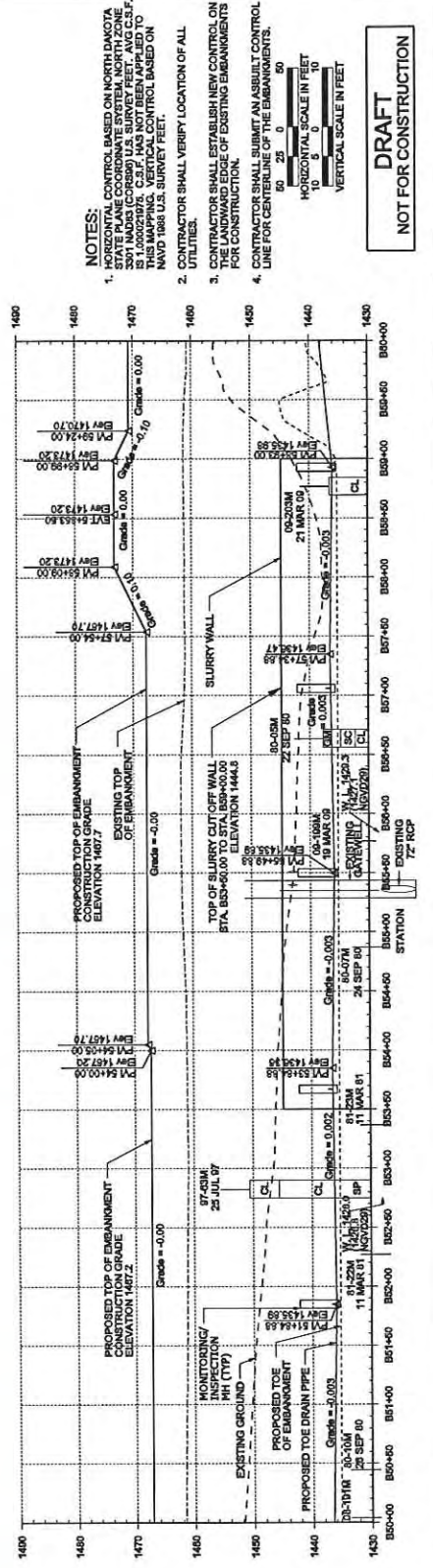
PLAN
STA. B50+00 TO STA. B50+00
SCALE 1" = 80'-0"



- NOTES:**
- HORIZONTAL CONTROL BASED ON NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, NORTH ZONE. THIS MAPPING, VERTICAL CONTROL BASED ON NAVD 1983 U.S. SURVEY FEET.
 - CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES.
 - CONTRACTOR SHALL ESTABLISH NEW CONTROL ON EXISTING EMBANKMENTS FOR CONSTRUCTION.
 - CONTRACTOR SHALL SUBMIT AN ASBUILT CONTROL LINE FOR CENTERLINE OF THE EMBANKMENTS.



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NOT FOR CONSTRUCTION

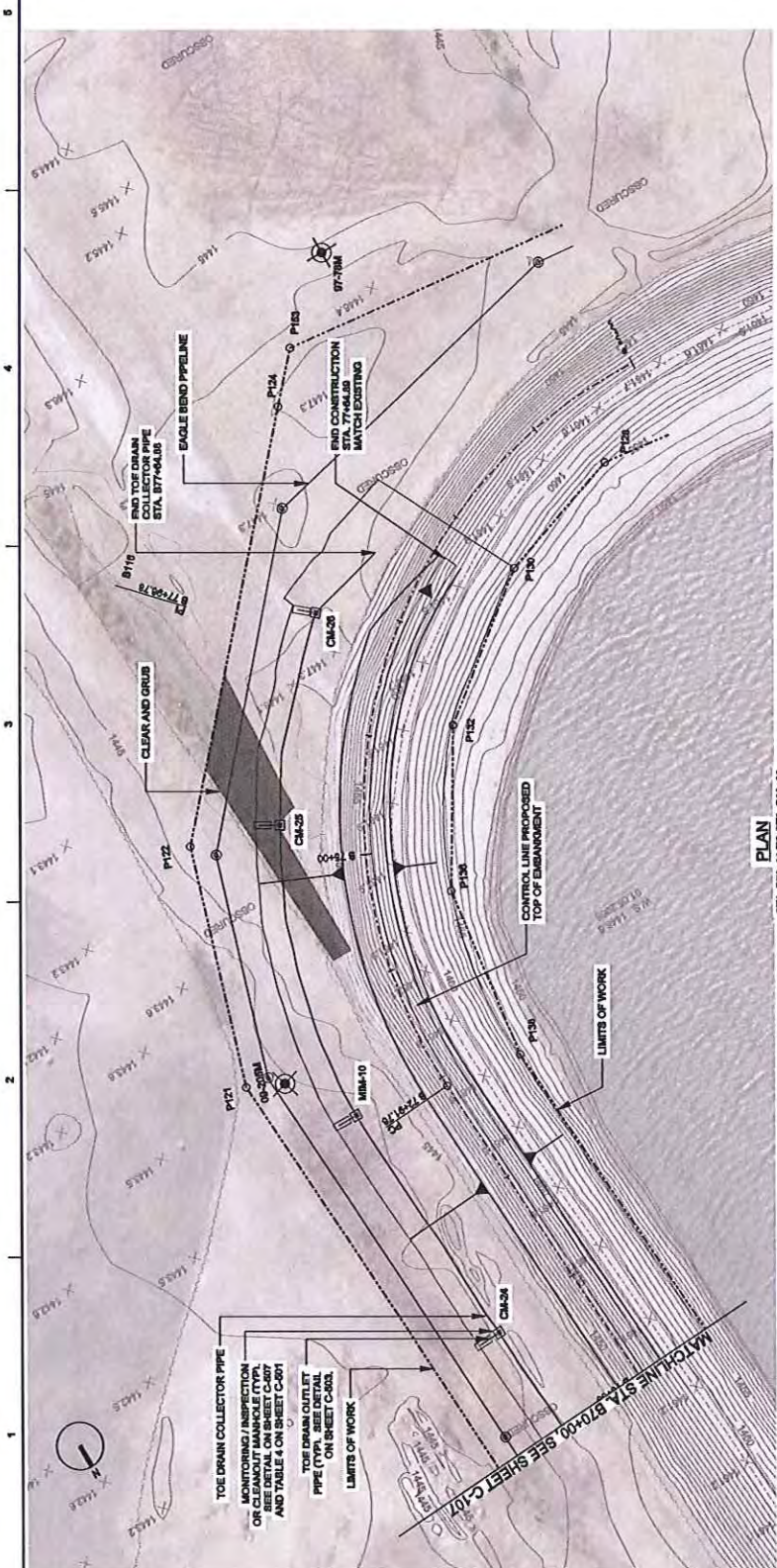


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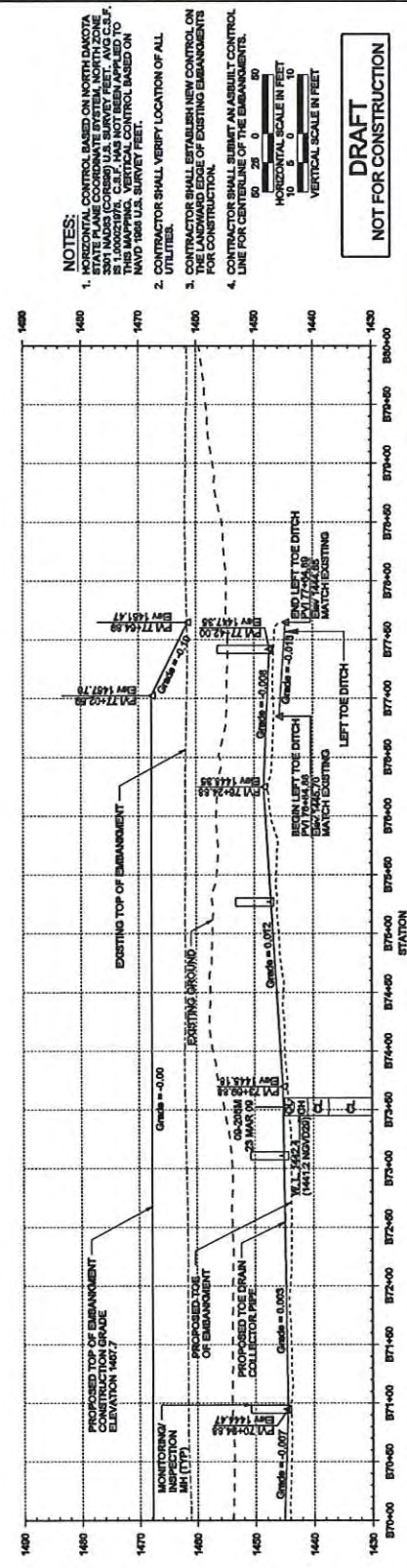
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1. HORIZONTAL CONTROL BASED ON NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, NORTH ZONE 3301 NAD83 (CORS98) U.S. SURVEY FEET. AVG C.S.F. IS 1.0002021972. C.S.F. HAS NOT BEEN APPLIED TO THIS CONTROL. NEW CONTROL BASED ON NAD 1983 U.S. SURVEY FEET.
2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES.
3. CONTRACTOR SHALL ESTABLISH NEW CONTROL ON THE LANDWARD EDGE OF EXISTING EMBANKMENTS FOR CONSTRUCTION.
4. CONTRACTOR SHALL SUBMIT AN AS-BUILT CONTROL LINE FOR CENTERLINE OF THE EMBANKMENTS.

STA. B70+00 TO STA. B80+00
CIVIL
PLAN

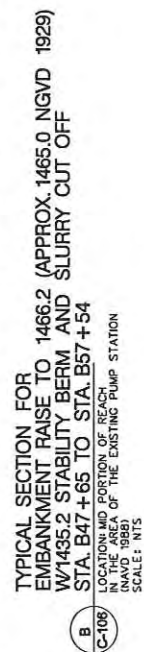
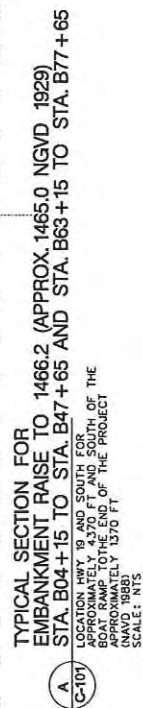


PLAN
STA. B70+00 TO STA. B80+00
SCALE: 1" = 50'-0"

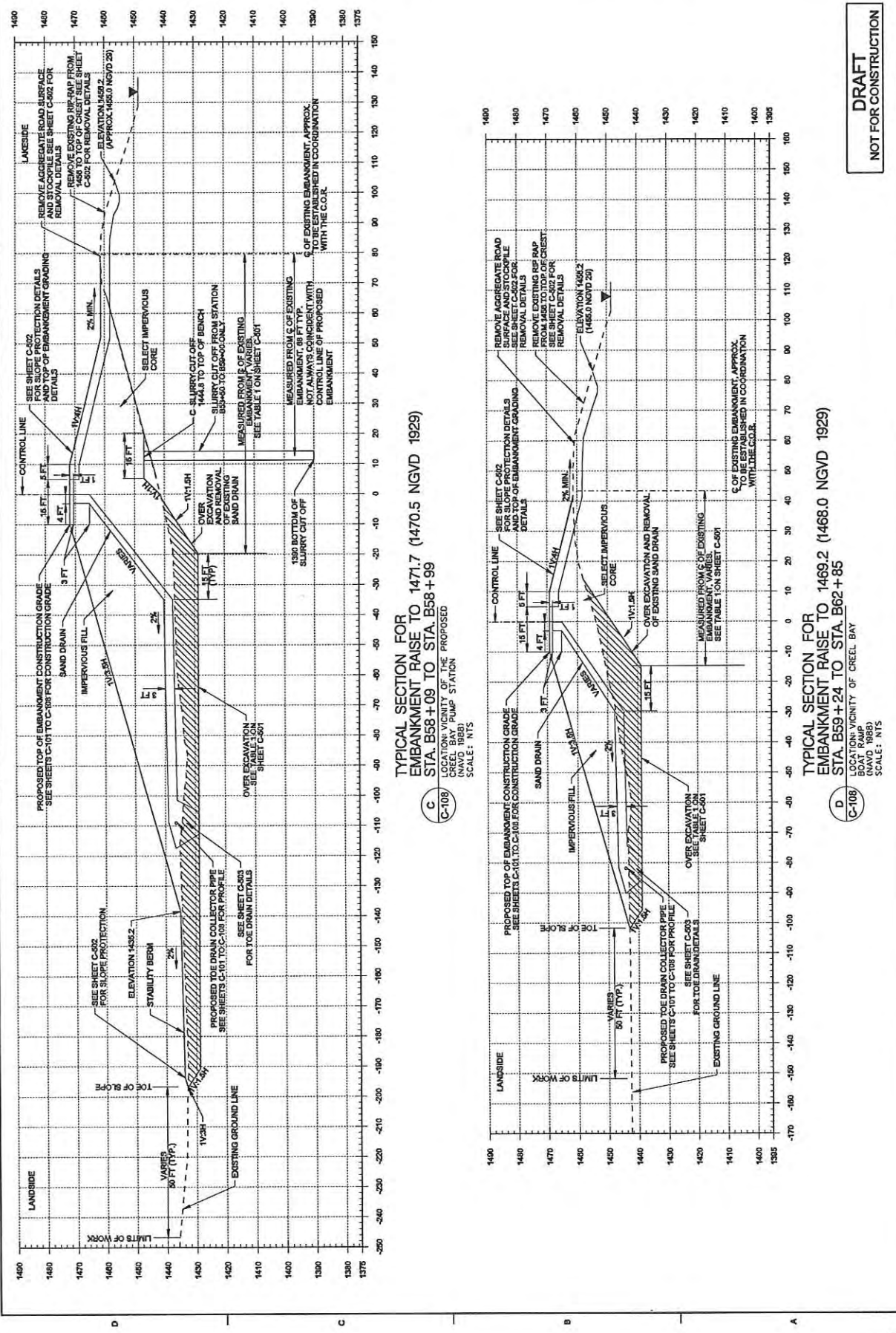


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NOT FOR CONSTRUCTION

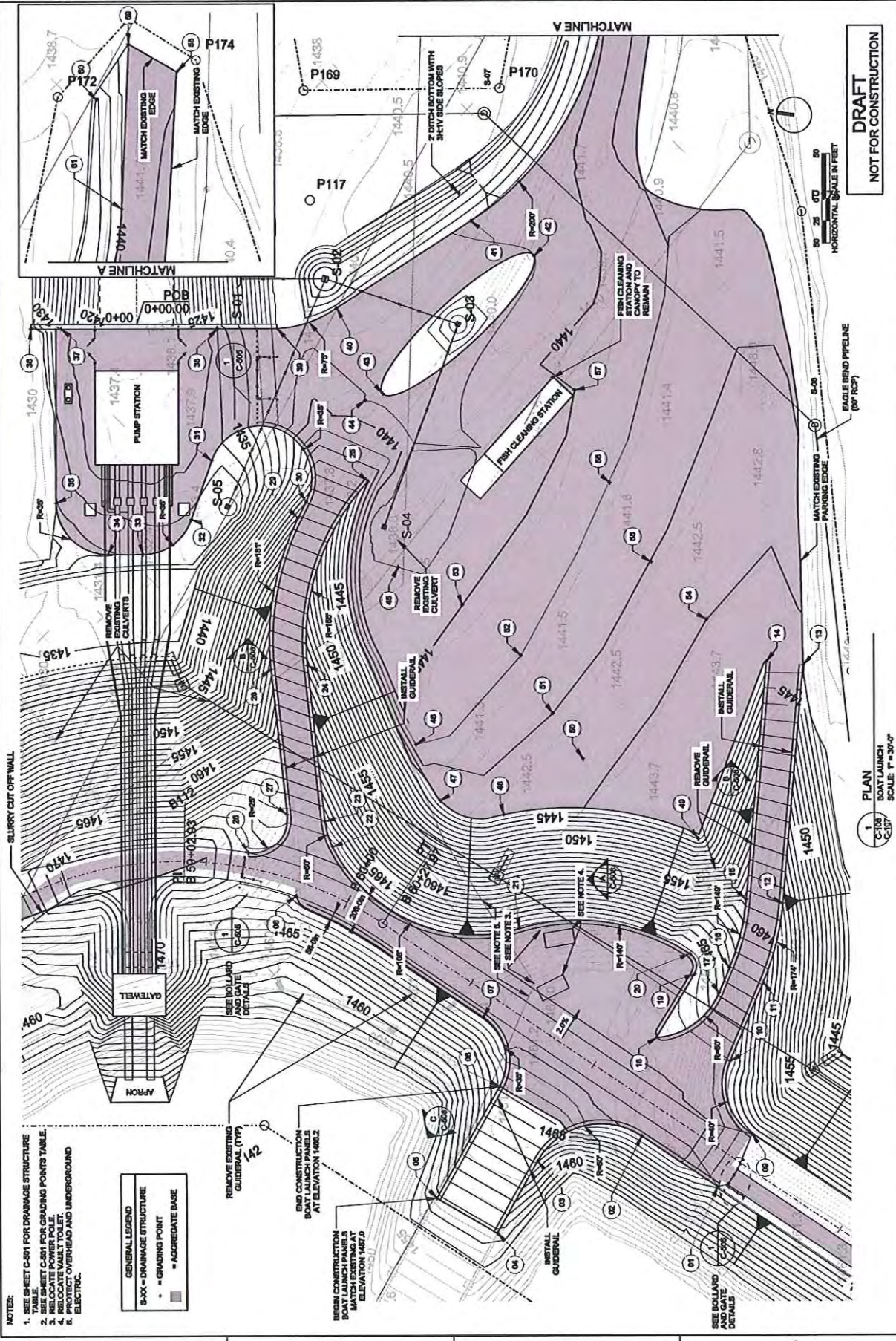
- NOTES:**
1. HORIZONTAL CONTROL BASED ON NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, NORTH ZONE 14, 1983 EDITION. THE 1983 NAD 83 DATUM IS LOCATED IN CLAY. HAS NOT BEEN APPLIED TO THIS MAPPING. VERTICAL CONTROL BASED ON NAVD 1988 U.S. SURVEY FEET.
 2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES.
 3. CONTRACTOR SHALL ESTABLISH NEW CONTROL ON THE LANDWARD EDGE OF EXISTING EMBANKMENTS FOR CONSTRUCTION.
 4. CONTRACTOR SHALL SUBMIT AN ASSUILT CONTROL LINE FOR CENTERLINE OF THE EMBANKMENTS.



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NOT FOR CONSTRUCTION



NOTES:

- SEE SHEET C-401 FOR DRAINAGE STRUCTURE TABLE.
- SEE SHEET C-401 FOR GRADING POINTS TABLE.
- SEE SHEET C-401 FOR ELEVATION TABLE.
- RELOCATE VENT TOWER.
- PROTECT OVERHEAD AND UNDERGROUND ELECTRIC.

GENERAL LEGEND

- XXX = DRAINAGE STRUCTURE
- = GRADING POINT
- = AGGREGATE BASE

END CONSTRUCTION BOAT LAUNCH PANELS AT ELEVATION 1480.2

BEGIN CONSTRUCTION BOAT LAUNCH PANELS AT ELEVATION 1487.0

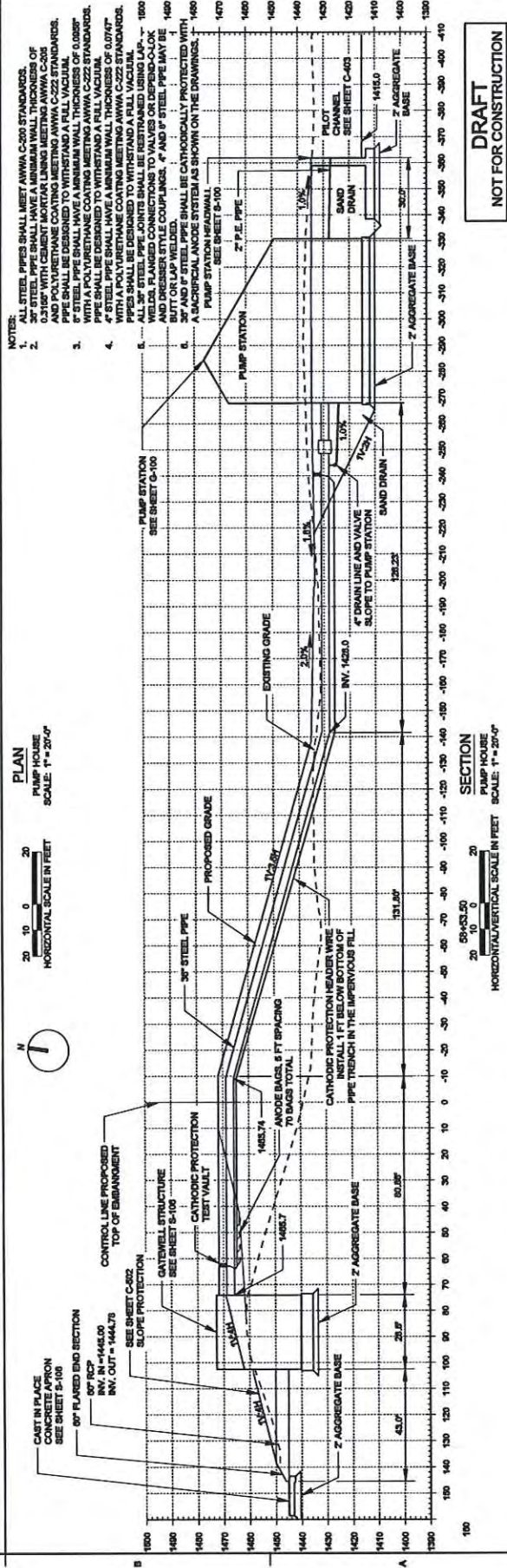
REMOVE EXISTING GUIDELINE (TYP)

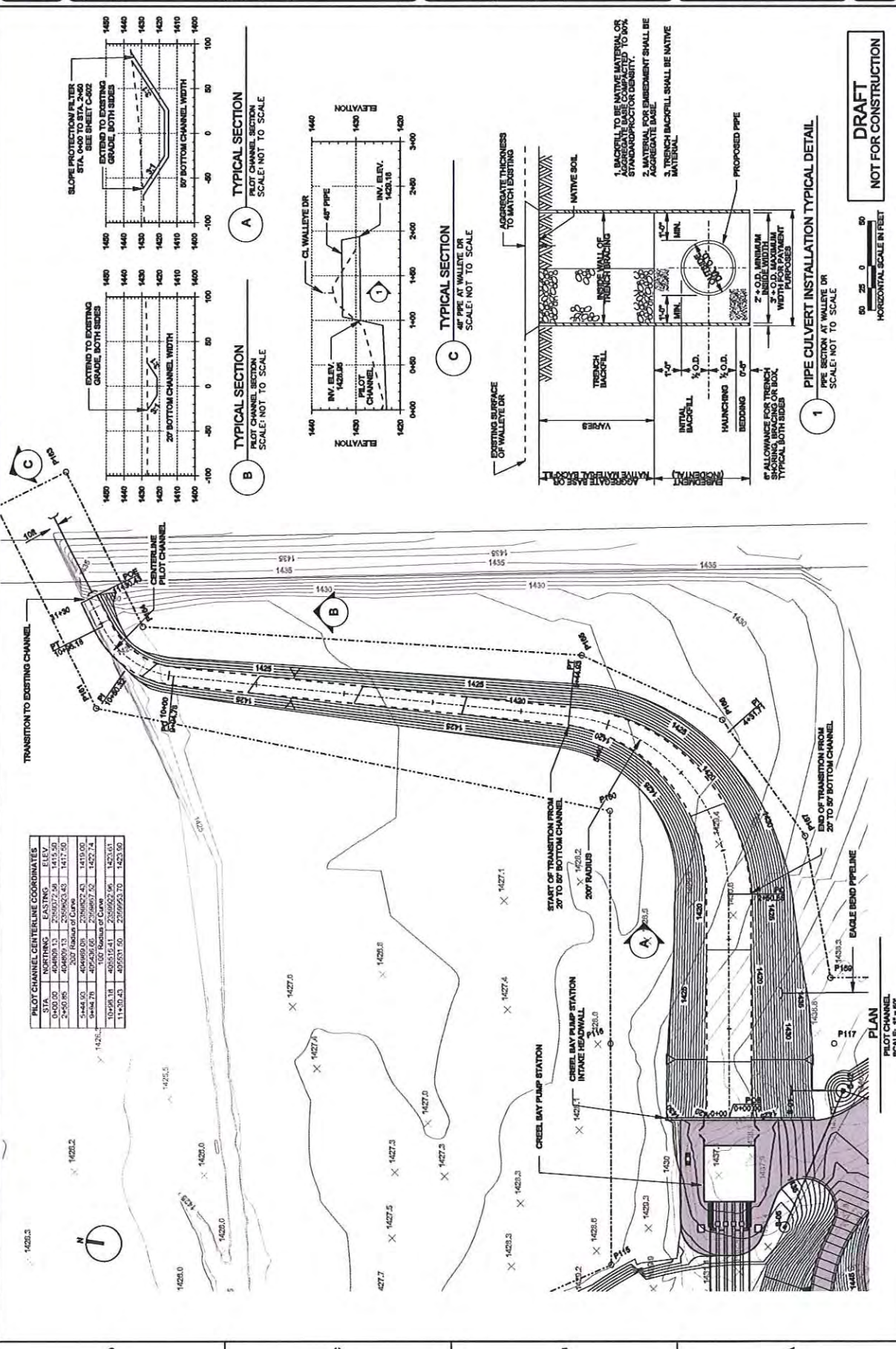
SEE DOLLARD AND GATE DETAILS

DRAFT
NOT FOR CONSTRUCTION

PLAN
BOAT LAUNCH
SCALE: 1" = 30'-0"

DETAIL PLAN PUMP HOUSE	SHEET IDENTIFICATION C-402
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TYPICAL SECTION A
 PILOT CHANNEL SECTION
 SCALE: NOT TO SCALE

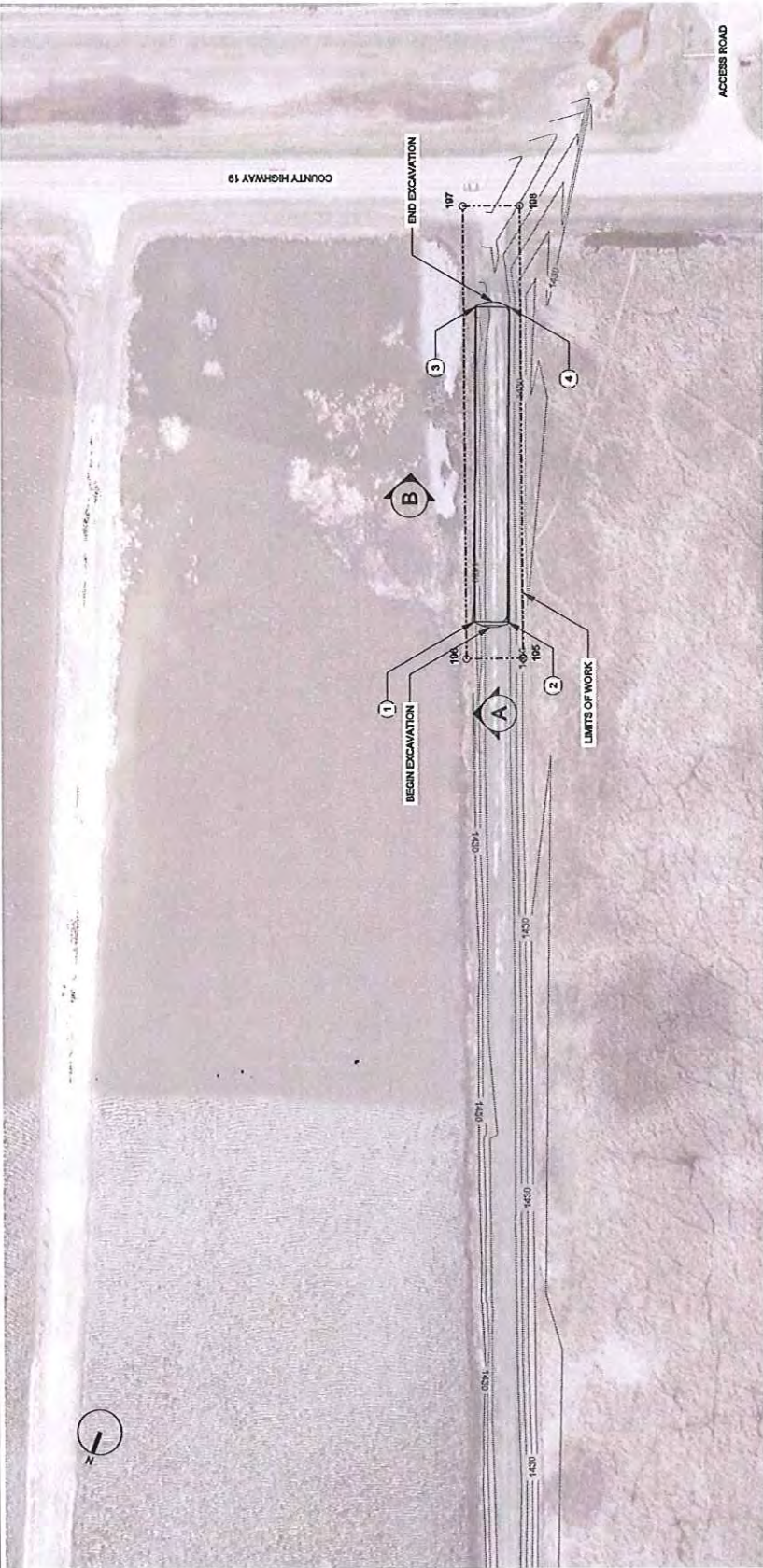
TYPICAL SECTION B
 PILOT CHANNEL SECTION
 SCALE: NOT TO SCALE

TYPICAL SECTION C
 48" PIPE AT WALL OR
 SCALE: NOT TO SCALE

PIPE CULVERT INSTALLATION TYPICAL DETAIL
 SCALE: NOT TO SCALE

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BERGMANN, JV U.S. ARMY CORPS OF ENGINEERS ST. PAUL, MINNESOTA PROJECT NO. 100-100-100 DRAWING NO. 100-100-100 DATE 10/1/00		NORTH MARSH GRADING PHASE 1, MARSH TO 1443.0 FEET ELEVATION DESIGNER: J. M. HANSON CHECKED: J. M. HANSON DATE: 10/1/00		SHEET IDENTIFICATION C-404
NO.	DESCRIPTION	DATE	BY	DATE
1	DESIGN	10/1/00	J. M. HANSON	
2	CHECK	10/1/00	J. M. HANSON	
3	REVISION			
4	REVISION			
5	REVISION			
6	REVISION			
7	REVISION			
8	REVISION			
9	REVISION			
10	REVISION			

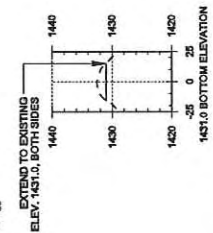


PLAN
 NORTH MARSH GRADING
 SCALE: 1" = 50'

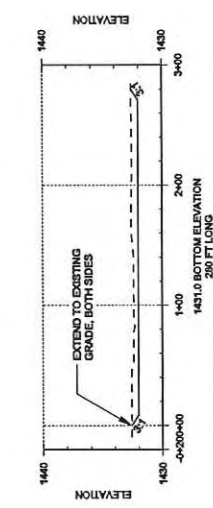
ID	NORTHING	EASTING	ELEV.
1	438,520.45	2,361,307.05	1431.0
2	438,520.45	2,361,307.05	1431.0
3	438,520.45	2,361,307.05	1431.0
4	438,520.45	2,361,307.05	1431.0

80 25 0 50
 HORIZONTAL SCALE IN FEET

DRAFT
 NOT FOR CONSTRUCTION



TYPICAL SECTION A
 SCALE: NOT TO SCALE



TYPICAL SECTION B
 SCALE: NOT TO SCALE

ATTACHMENT 2

ALTERNATIVES SCREENING DOCUMENT

**Devils Lake Flood Risk Management Project
Alternatives Screening Documentation**

**U.S. ARMY CORPS OF ENGINEERS
ST. PAUL DISTRICT**

JUNE 2008

Devils Lake Flood Risk Management Project Alternatives Screening Documentation

INTRODUCTION

The "Emergency Supplemental Appropriations Act, 2007" provided the Corps with \$5 Million to evaluate the next course of action at the City of Devils Lake should Devils Lake continue to rise. The purpose of this document is to present the results of the screening process for the initial array of alternatives and to identify the alternatives that will be considered in greater detail. All elevations are in NGVD of 1929 adjustment.

Background: Devils Lake is a closed basin that has a history of widely fluctuating lake levels. First recorded measurements began in the late 1800's. The lake elevation was as low as 1400.9 ft. in 1940 and reached its peak-recorded elevation of 1449.2 in May 2006. For the past 4 years lake levels have ranged between 1446.5 ft. and 1449.2 ft. as flows made their way to Stump Lake. Devils Lake has now equalized with Stump Lake, reducing available storage for large flood events. The elevation of both lakes in April 2008 was 1447 ft. If the lake reaches elevation 1459 ft., it will overtop the high point between the lake and Tolna Coulee and flow down the coulee to the Sheyenne River.

Many initiatives have been undertaken in the basin to mitigate for rising lake levels including; numerous road raises, relocation of affected structures, the construction of embankments at the City of Devils Lake, buyouts of some affected property owners, implementation of a Basin Water Management Plan developed by the Devils Lake Joint Board to improve watershed management in the upper basin, wetland restoration through a variety of agency programs, an experimental irrigation program, and the construction of an outlet from the West Bay of Devils Lake to the Sheyenne River. Some of these efforts have had limited success due to lack of participation, funding constraints or operational constraints.

Initial embankments to protect the City of Devils Lake were constructed in the 1980's to an elevation of 1445 under the Corps of Engineers' Section 205 program. Since 1996, the embankments have been raised/extended three times, due to rising lake levels, at a total cost of \$53 million. In 1996 embankments were raised to 1450, again in 1997 to 1457, with the most recent raise completed in 2007 with a top of embankment elevation of 1460. The current embankment system is about 8 miles in length along the west, south and east side of the city.

In 2005, an initial evaluation indicated that should the lake continue to rise, the next embankment raise would likely require a substantial extension of the existing embankment to tie into high ground and may require a substantial increase in the existing project footprint. A rough order of magnitude estimate completed at that time indicated that the potential solutions could cost between \$100 – 400 million.

Studies have shown that the climate condition affecting the lake is currently in a “wet state”, causing Devils Lake to rise. Geological studies have shown that Devils Lake has spilled to Stump Lake at least five times and reached the natural spill elevation to the Sheyenne River twice in the past 2,500 years. Regardless of the water management measures implemented in the upper basin, or the size of the outlet constructed to the Sheyenne River, Devils Lake could continue to rise and eventually overflow from the east end down Tolna Coulee, as identified to have occurred during pre-settlement conditions. While the current probabilities are low, the possibility of such conditions recurring still exists.

The existing embankment system at the City of Devils Lake has a top elevation of 1460. If embankments were going to be retained as the primary approach to reducing flood risk at the City of Devils Lake, construction would need to be initiated several years before the lake reached 1454 due to the length and magnitude of earthwork that would be involved with another embankment raise. The primary purpose of this project is to manage the risk to public safety and flood damages in the City of Devils Lake. The expected product of this effort is to have a defined implementable plan, including plans and specifications if necessary, that can be instituted once the lake reaches a set trigger elevation with a forecast to rise further.

The initial development and screening of alternatives relies primarily on existing information and studies that were conducted as part of Corps of Engineers 2003 outlet study. Much of the information presented or referenced in the Devils Lake North Dakota Integrated Planning Report and Environmental Impact Statement, dated April 2003, (Devils Lake IPR-EIS) was used as a basis for describing potential effects and identifying issues and potential cost for some features or mitigation. While there may have been some changes in resource conditions or lake levels since the completion of that report, the information and analysis presented in that report still reflects current conditions. As such, use of this information is appropriate for the initial screening of alternatives.

Alternative Development: Several alternatives have been identified for consideration in evaluating future possible actions at the City of Devils Lake. Input provided at public meetings and directly from stakeholders indicated a desire that the array of alternatives should include actions that would preclude the need for additional embankment raises, or at least minimize the cost of the next embankment raise. The alternatives identified initially for evaluation are; Embankment Raises/Extensions, Relocation, Combination of Embankment Raises/Extensions and Relocation, Modify Elevations at Tolna Coulee, and Upper Basin Storage.

Alternative Screening Criteria: Screening criteria were developed to focus evaluation and design efforts on the most implementable alternatives. Given the primary focus of the project, alternatives were initially evaluated to determine if the alternative was effective in maintaining a reliable level of flood risk management at the City of Devils Lake. Other criteria include environmental effects, social effects, expected acceptability, Implementability, risk, and cost.

ALTERNATIVES DEVELOPMENT

Comments from public meetings indicated a desire by several interests to develop basin wide approaches in an effort to prevent or attenuate future lake level rises and prevent an overflow from Devils Lake. Others have suggested that the best approach would be to construct an outlet capable of passing enough flows to prevent the lake from rising further. There are numerous opinions as to whether or not drainage permits have been inappropriately issued or adequately monitored, whether or not past decisions in the upper basin should be reversed, whether or not the Boundary Waters Treaty is even applicable to Devils Lake and why a control structure at Tolna Coulee isn't being developed. Many felt that with the right amount of upper basin storage and the right outlet operation plan, all future damages around Devils Lake may be avoided. Many of these opinions and issues may never be resolved. The development of a basin wide management plan is beyond the scope of this effort. (Note: The Devils Lake Basin Joint Board updated its basin wide plan in 2006) The primary purpose of this effort is identify/develop a plan that can be implemented to reduce the flood risk at the City of Devils Lake should the lake continue to rise.

Six broad categories of alternatives have been identified for initial consideration and evaluation. Cost estimates for each alternative are based on extrapolations or updates of past studies or efforts, and should be considered primarily as representing an order of magnitude first costs estimate for comparison purposes only. They do not include operation and maintenance costs.

FUTURE WITHOUT PROJECT CONDITION

Before any alternatives can be evaluated the without project condition must first be established. This is considered to be the base condition against which the other alternatives are compared. It includes those most likely actions expected to be undertaken in the future in the absence of a Corps' project. Good indicators of expected future actions are those actions taken in the past. If Devils Lake continues to rise, it is assumed that some actions would be taken in an effort to maintain the level of protection afforded by the existing embankment system. It is possible that a limited raise of 1 or 2 feet of the existing embankment system could be implemented without increasing the footprint or extending the existing embankments. Such an approach may require accepting some compromises in standard design criteria for embankments and may result in a structure with more inherent risk of failure. Other selective infrastructure protection measures, such as raising roads, may also be implemented. If Devils Lake continued to rise once a limited raise of the embankments was completed, some portions of the City of Devils Lake may be relocated due to safety concerns. It is assumed that as the lake nears the existing overflow elevation of 1459, some measures to modify the natural outlet would be taken to minimize the potential for severe erosion should an overflow occur. It is assumed that the natural outlet would be altered with potential modifications to the shape, elevation, and outflow capacity of the outlet. There are many political, legal, social, and environmental considerations due to the extent of upstream and downstream interests affected by the action. However, the modified outlet condition is assumed due

to the potential for catastrophic downstream damages if severe erosion were to occur in conjunction with an overflow event. The implementing agency or government unit can not be identified at this time. The sill elevation, shape, and outlet capacity of the modified outlet has not been defined. However, based on studies completed by the North Dakota Geologic Survey; it is possible that the sill elevation would be less than the current elevation of 1459. Currently, the United States Geological Survey estimates there is a 6 percent probability that Devils Lake will exceed the elevation of 1459 by 2040 and an 11 percent probability that it will exceed 1457.

RAISE/EXTEND EXISTING EMBANKMENT AT DEVILS LAKE

Raise and extend the existing embankment at the City of Devils Lake to ensure a reliable level of risk as the lake rises. Assuming Devils Lake continues to rise, the embankments would have to eventually be raised to an ultimate top elevation potentially as high as 1470 ft. An interim raise would be between elevations 1463 and 1465. The alignment of the embankment raise/extension would depend on decisions regarding whether or not the area currently protected by the existing embankments, or areas not threatened by existing lake levels, should be included in the areas protected by future embankment modifications. Eventual alignments could range from providing the minimal area protected to include critical infrastructure, to providing the maximum area protected in order to maximize protection of all currently protected infrastructure.

Cost: Cost of this alternative ranges from \$100,000,000 to \$200,000,000 depending on the alignment and elevation selected for the next interim raise.

RELOCATION

Incrementally relocate structures and infrastructure up to elevation 1464 at the City of Devils Lake as the lake continues to rise. Relocations would be initiated when the protection afforded by the existing embankments are no longer considered reliable.

Cost: The cost of this alternative is estimated to be \$412,000,000. This estimate is based on the 2001 Devils Lake Infrastructure Protection Study updated to March 2008.

COMBINATION EMBANKMENT RAISE/EXTENSION AND RELOCATION

A combination of embankment extensions/raises implemented in conjunction with relocations. The type of action implemented in any given area that is currently protected by the embankment system would be based on several factors including; cost, environmental effects, land acquisition, constructability and factors such as transportation and other infrastructure considerations

Cost: Cost of this alternative ranges from \$100,000,000 to \$200,000,000 depending on the alignment and elevation selected for the next interim raise.

MODIFY ELEVATIONS AT TOLNA COULEE

Lower the existing overflow elevation at Tolna Coulee from 1459. The final design of this alternative could range from lowering the elevation by as little as 2 feet to as much as 10 feet. Depending on the design elevation, embankments would still need to be constructed at the City of Devils Lake to provide protection at the altered overflow elevation. A comparable design for this alternative could be the construction of a gravity flow outlet from East Devils Lake at some selected elevation in lieu of modifying the overflow elevation at Tolna Coulee.

Cost: Cost of this alternative is estimated to range from \$110,000,000 to \$200,000,000. Cost estimates include first costs for construction and mitigation. Construction first costs are estimated to run from \$10,000,000 to \$100, 000,000, depending on the design and location for the modification. If implemented as a Federal project, mitigation features must be included in the first costs and implemented concurrent with construction. The total estimated costs include estimated mitigation costs for effects on natural resources (\$40,000,000), effects on cultural resources (\$10,000,000), and effects on water users downstream (\$50,000,000). The mitigation costs are based on the estimated mitigation costs presented in the Devils Lake IPR-EIS for the proposed federal outlet. The analysis for the federal outlet assumed the freshest available water in Devils Lake was being discharged, that the water was being run through a sand filter prior to discharge, and that the outlet would not be operated in a manner that either exceeded water quality standards or channel capacity on the Sheyenne River. A detailed analysis of the effects of a Tolna Coulee or east end outlet could result in a significant increase in the mitigation cost.

UPPER BASIN STORAGE

Restore up to 50 percent of the possibly drained depressions in the upper basin of the watershed to reduce inflow into Devils Lake. As described in the Devils Lake IPR-EIS, implementation of this alternative would require the placement of approximately 40,000 acres of land into an upper basin storage program.

Cost: Implementation of this alternative would involve acquisition or leasing of land including related administrative costs, construction of control structures where needed, and the development of an operating plan for the control structures when the lake recedes. Average cost per acre is estimated to be \$1,350, resulting in a total direct cost for a 40,000-acre program of \$54,000,000.

ALTERNATIVE SCREENING CRITERIA

The primary purpose of this project is to focus on what actions should be taken at the City of Devils Lake to reduce risk of flood damages to the city should Devils Lake continue to rise. Studies have shown that the climate condition affecting the lake is currently in a "wet state", causing Devils Lake to rise. Geological studies have shown that Devils Lake has spilled to Stump Lake at least five times and reached the natural spill elevation to the Sheyenne River twice in the past 2,500 years. Regardless of the water management measures implemented in the upper basin, or the size of the outlet constructed to the Sheyenne River, Devils Lake could continue to rise and eventually overflow from the east end down Tolna Coulee. While the current probabilities are low, the possibility of such conditions recurring still exists.

In order to evaluate the effectiveness of the initial array of alternatives in meeting the primary project objectives, several considerations were identified to help in screening alternatives and developing recommendations for alternatives to be considered in detail.

Effectiveness: Whether or not the alternative would be responsive (i.e. timely) and effective in maintaining an acceptable level of flood risk management in accordance with Corps of Engineers design criteria.

Environmental Effects: Direct and indirect effects on natural resources and cultural resources. Direct effects are those effects associated with the construction. Indirect effects are those effects that may occur as a result of changed environmental conditions due to the construction or operation of a project.

Social Effects: Direct and indirect effects on socio-economic resources such as transportation, regional growth, public safety, employment, recreation, public facilities, and public services.

Acceptability: Controversy and potential effects on community cohesion are indicators of acceptability. Views of other States, Nations and potential effects on Tribal Resources are also indicators of acceptability.

Implementability: Whether or not there are significant outstanding technical, social, legal or institutional issues that affect ability to implement the alternative.

Cost: The first costs of the project.

Risk: The uncertainties, vulnerabilities, and potential consequences of the alternative.

ASSESSMENT OF ALTERNATIVES AND SCREENING

The purpose of this screening process is to summarize previous and current evaluations and present conclusions regarding alternative measures that should be evaluated in detail to reduce the risk of flood damage at the City of Devils Lake should lake levels continue to rise.

The Devils Lake North Dakota Integrated Planning Report and Environmental Impact Statement, dated April 2003, was a key source of information for this initial screening. That document was prepared to address the planning and analysis of alternatives to address flood damages related to rising lake levels in the flood-prone areas around Devils Lake. The study comprehensively evaluated upper basin storage, infrastructure protection, and a variety of outlet options to the Sheyenne River. Extensive hydraulic, hydrologic, water quality and environmental modeling was done as part of that evaluation. While existing conditions have changed somewhat since those studies were completed, most of the information is still relevant and directly applicable to current conditions. Many of the studies completed for that evaluation were used as the source information for this initial screening.

Some preliminary hydrologic analysis was needed to evaluate the effectiveness of options at Tolna Coulee. That analysis is presented in Attachment 1.

Updated information regarding upper basin storage programs was obtained from the North Dakota State Water Commission.

Assumptions

1. In the absence of developing a plan of action for the City of Devils Lake (i.e., the without project condition), it is assumed that if Devils Lake continues to rise some actions will be initiated to maintain some level of protection for the city. Interim measures may involve raising the existing embankments to the extent practical. The implemented design may or may not meet Corps criteria. It is also possible that delaying design efforts may result in a plan based on expediency, not efficiency.
2. If the lake continues to rise to the point of overflow, some effort will be made to minimize the potential for severe erosion at Tolna Coulee.

The potential adverse effects associated with an overflow are the basis for this assumption. There is some debate regarding the extent of erosion that could occur. Devils Lake is estimated to have spilled to the Sheyenne River within the last 1,200 years and borings in the Tolna Coulee area indicate erosion did not appreciably occur at that time. However, the topography and the amount of erosion that did occur during the last overflow are unknown and it is possible that more soil eroded than is currently in place. Analysis indicates that given the nature of the soils, should the lake rise to elevations in the range of 1460.75 ft. (which is estimated to have a 2 percent probability of occurrence by the year 2040) there is a high potential for severe erosion to occur once an overflow

from Devils Lake begins. Estimates are that, should an event of the magnitude identified using dam safety criteria (in excess of a 100-year event) occur with the initial water surface elevation at 1459.0 ft., Tolna Coulee could erode to an elevation 1450 with discharges in excess of 15,000 cubic feet per second and over 900,000 cubic yards of material being eroded. Such an event would have significant effects along the Sheyenne River all the way to Lake Ashtabula, a distance of approximately 120 river miles. The water quality effects associated with such an event could continue all the way down the Red River of the North.

The maximum design elevation of the embankments is based on the assumption that actions will be taken to limit severe erosion. While it is unlikely that the exact conditions assumed would occur, it is a valid assumption for design purposes as it represents a worst case condition.

3. To maintain an acceptable level of safety for the ultimate embankment height, the current natural outflow elevation of 1459 cannot be raised. It is assumed that no measures will be taken to elevate the existing overflow elevation at Tolna Coulee.

A discussion of the effectiveness, impacts and risk for the without project condition, and each of the alternatives is presented below. A summary is presented in Table 1. A screening criteria matrix for the alternatives to the base condition is presented in Table 2.

FUTURE WITHOUT PROJECT CONDITON

Effectiveness

Base Condition. This approach may result in hastily designed protection measures that may not be as cost effective or complete as would a plan produced by a thorough planning process.

Environmental Effects

Natural Resources: If Devils Lake continues to rise, wetland and upland habitat would be inundated. Water quality in Devils Lake would likely get fresher as the increased inflows dilute the high concentrations of dissolved solids. The fishery resource would expand as additional habitat becomes available and natural reproduction increases. Road raises and embankment raises or relocations could result in effects on wetland, grassland, woodland and aquatic habitat in the construction area. There would be periodic effects on Sheyenne River aquatic habitat due to water quality and flow changes that would be associated with overflow events. A natural overflow event could have significant effects on the Sheyenne River with respect to the fishery, erosion, water quality and ground water. The degree of effects would be dependent on the magnitude, duration and frequency of overflow events. Current estimates are that there is a 6 percent chance that Devils Lake will reach an elevation exceeding 1459 by the year 2040.

Cultural Resources: Much of the area around Devils Lake has not been surveyed. However, existing information indicates that there is potential for effects on unknown cultural resources around the lake due to rising waters and wave action. Excavating borrow material, raising/extending embankments, relocating houses or utilities all have the potential of have adverse effects on cultural resources. A natural overflow could have adverse effects on cultural resources along the Sheyenne River through inundation, erosion, and deposition.

Social Effects

Impacts to socio-economic resources under the without project condition are likely to be a continuation of those in the past if the lake continues to rise. Among the most significant adverse impacts to be expected are:

- Additional dislocation of residents directly and indirectly affected by flooding, resulting in disrupted neighborhoods and fractured communities.
- Continued conflicts between residents around Devils Lake and downstream along the Sheyenne River regarding the cause of the lake rise and solutions to address the problem.
- Deteriorating community cohesion resulting from the conflicts and dislocations.
- Limited community growth and development; this again is a product of population dislocation as well as the unwillingness of businesses to invest locally due to the perceived risk of the lake.
- Impairments to public health as the mental stress of the difficult conditions and physical effects of wet basements (mold and allergies) take its toll on the populace.
- Impaired public safety due to increasingly more hazardous highways (narrower shoulders, steeper road embankments) and flood protection embankments that may be less reliable if raised under emergency conditions.
- Costs at all government levels (city, county, state, and Federal) to protect infrastructure features around the lake on an incremental basis as the lake rises; as lake continues to rise, protection of infrastructure features becomes increasingly costly and expenditures become more difficult to justify.
- Loss of productive farmland, the subsequent loss of income to producers, and the ripple effect on the local economy as a whole.

Acceptability

Other States, Nations and Tribal Resources: Since natural conditions would essentially prevail, there would be no conflict with the Boundary Waters Treaty or other states. While there may be concern with the potential introduction of undesirable biota to the Sheyenne River with an overflow, this would be viewed as a natural occurrence. Damages would continue to occur on tribal lands due to rising waters. Modifying Tolna Coulee may be a source of controversy with the Spirit Lake Nation.

Risk

The design level of protection for the existing embankment was previously set at 1454. USGS estimates the chance of the lake reaching this elevation by the year 2040 is 24 percent. The difference between this elevation and the top of embankment (1460) is the freeboard range designed to accommodate potential wave action. As lake elevations rise above 1454 and the freeboard range is reduced, the chance for wave action overtopping the embankment and causing damage increases. At some point, as the lake approaches the top of embankment, overtopping wave action will overwhelm interior pumping capacity and flood levels within the protected area rise to catastrophic magnitudes. Prior to this occurrence, population loss would be expected as those not willing to evacuate to other parts of town relocate out of the area altogether. If emergency levees are built, they will likely not meet dam safety criteria and there will be increased residual risk of failure.

There is additional risk that overflow from Devils Lake to the Sheyenne River will occur resulting in adverse impacts downstream. USGS estimates the chance of this occurrence at elevation 1459 is six percent. The upside risk of doing nothing is saving the cost of project implementation and preventing the occurrence of negative impacts associated with an implemented project (to be discussed later). The probability of this is high as the probability of the lake rising to a damage causing elevation is low.

Conclusion: The Future Without Project Condition (No Action) is the base condition against which other alternatives are compared to quantify and determine the significance of impacts. The alternative must be presented in the National Environmental Policy Act (NEPA) document prepared for any Corps project that may be proposed. This alternative will be carried forward for detailed evaluation.

RAISE/EXTEND EXISTING EMBANKMENT AT DEVILS LAKE

Effectiveness

This alternative provides a plan for maintaining an acceptable level of risk for flood damage reduction at the City of Devils Lake. Effectiveness is considered to be high.

Environmental Effects

Natural Resources: Some upland and wetland resources would be affected by the expansion of the existing embankment width or associated extensions. As with past raises, some mitigation may be required for impacts on wetlands. There has been some minor loss of storage associated with areas protected by the existing embankments. An increase of the existing embankment height or length would have a minimal effect on eventual lake elevation as the current top of embankment elevation is 1460. Effects

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around the lake and downstream would be the same as the Future Without Project Condition.

Cultural Resources: There is a potential for cultural resources effects associated with the excavation of borrow material for embankment construction and construction effects along the selected alignment.

Overall, the potential environmental effects of this alternative are considered low adverse.

Social Effects

The benefit to those outside the line of protection (compared to without project condition) is the assured preservation of the City of Devils Lake as the center of the regional economy and provider of essential services for local community. Those that are dislocated may be more inclined to relocate locally. There would be enhanced public safety for those inside the levee and an opportunity to maintain community and promote business investment. A planned embankment raise will have inherently less risk compared to an embankment raised under emergency conditions that may occur under the without-project condition. There are likely to be adverse effects on fiscal resources of city, county, and state. These would be offset if the raised embankment generates sufficient damage reduction benefits. Increased levee footprint will result in real estate takings, and possibly limited residential buy-outs. Depending on height and alignment of embankments, airport runways may have to be extended. Highway 2 and rail lines may also require modification.

Overall, the potential social effects of this alternative are considered moderate positive.

Acceptability

Other States, Nations and Tribal Resources: Similar to Future Without Project Conditions.

This alternative would have potential positive effects on community cohesion. Overall, the acceptability of this alternative is considered to be high.

Risk

Downside risk is that there is a good chance that the lake will not rise to a height for the raised embankment to generate sufficient damage reduction benefits. USGS estimates the chance of the lake reaching elevation 1454 by the year 2040 is 24 percent. The various government entities may spend \$100-\$200 million for a raise of the embankment that may never be needed. After construction, the perception may remain that the City of Devils Lake is a risk and business investment and economic growth would still be inhibited. The City is risking a financial burden that it may not be able to manage.

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Overall risk associated with this alternative is considered to be low.

Implementability

Based on past embankment raises, it does not appear that there would be insurmountable technical, social, legal or institutional issues that would prevent this alternative from being implemented. Data needs and studies that would need to be completed during design would include cultural resources, topography, land use information, ground water studies, interior drainage and geotechnical studies. The most likely NEPA document required would be an Environmental Assessment. The City of Devils Lake, the local sponsor for the existing levee system, has expressed a concern regarding the overall project cost and their potential to fund the project. The potential inability to find a local sponsor capable of funding the non-federal portion of the project could prevent timely implementation. Implementability of some level of embankment raise is considered to be high.

Conclusion: This alternative meets the primary purpose of the project. This alternative should be carried over for detailed evaluation.

RELOCATION

Effectiveness

This alternative would preclude the need for another embankment raise. The ability to design and implement needed infrastructure modifications in a timely manner could reduce the responsiveness of this alternative. Effectiveness is considered to be high.

Environmental Effects

Natural Resources: There are a variety of potential adverse effects associated with the required development of new infrastructure that would be associated with relocation. Some of these effects may be offset with the positive natural resource effects associated with vacated land along Devils Lake. Effects around Devils Lake and downstream would be similar to the Future Without Project Conditions.

Cultural Resources: There are numerous historic structures in and around the City of Devils Lake. Structural relocations would require cultural resource surveys and evaluation. Unavoidable effects on historic properties would have to be mitigated by formal documentation using large format photography and measured drawings, preparation of building and neighborhood histories, protection of historic architectural features, and/or data recovery excavation.

Overall, the potential environmental effects are considered to be low adverse.

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Social Effects

Implementing a relocation program has potential significant effects (positive and negative) on transportation, community cohesion, public facilities and services, property values, and public safety. Neighborhoods would be disrupted and a portion of the population may move away from the area altogether. Public safety is improved over the without project condition by clearing out the area of potential inundation.

Overall, the potential social effects are considered to be high adverse.

Acceptability

Other States, Nations and Tribal Resources: Similar to the Future Without Project Conditions.

Potential effects associated with community cohesion and controversy would be varied. Overall, the acceptability of this alternative is rated moderate to low.

Risk

Risk associated with relocation is primarily negative. Probability is higher that the lake will not rise high enough for the relocation plan to generate sufficient damage reduction benefits to justify financial and social costs. Some relocation features require less lead time and can be implemented in smaller increments than an embankment raise so trigger elevations can be set higher. However, lead time for major infrastructure relocations can be lengthy and affect overall responsiveness.

Overall risk associated with this alternative is considered to be high.

Implementability

Relocation of a substantial portion of the City of Devils Lake could require a significant modification to the existing infrastructure system including the airport, sewage lagoons, collection lines, Highway 2, power substations and the railroad line. It is unknown at this time what percentage of the people in the City of Devils Lake would remain in the area when it came time to relocate. If adequate infrastructure or development opportunities were not in place far enough in advance, a large portion of the participants could move out of the region. Due to the significant social/economic impacts associated with this alternative, the most likely NEPA document required for this alternative would be an Environmental Impact Statement. Costs, infrastructure effects/needs, and potential social impacts associated with this alternative make it unlikely that a non-federal sponsor could be found for this alternative.

Implementability is considered moderate to low.

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Conclusion: It is recommended that this alternative not be carried over as a stand alone alternative.

COMBINATION EMBANKMENT RAISE/EXTENSION AND RELOCATION

Effectiveness

This alternative provides a plan for maintaining an acceptable level of risk for flood damage at the City of Devils Lake and could reduce the costs associated the embankment extensions. Effectiveness is considered to be high.

Environmental Effects

Natural Resources: Effects on natural resources would be similar to those described for the Embankment Raise/Extension and Relocation alternatives. It is anticipated that relocation features would be limited and not require extensive re-design or additional investment in the existing infrastructure system.

Cultural Resources: Effects on cultural resources would be similar to those described for the Embankment Raise/Extension and Relocation alternatives.

Overall, the potential environmental effects of this alternative are considered low adverse.

Social Effects

Effects on social resources would be similar to those described for the Embankment Raise/Extension and Relocation alternatives. Number of properties requiring relocation, and thus the associated impacts, would be significantly less than those described for the stand alone alternative of Relocation.

Overall, the potential social effects of this alternative are considered moderate positive.

Acceptability

Other States, Nations and Tribal Resources: Similar to the Future Without Project Conditions.

This alternative would have potential positive effects on community cohesion. Overall, the acceptability of this alternative is considered to be high.

Risk

Risks of implementing this alternative would be similar to those described for the Embankment Raise/Extension and Relocation alternatives. Overall risk associated with this alternative is considered to be low.

Implementability

It does not appear that there would be insurmountable technical, social, legal or institutional issues that would prevent this alternative from being implemented. This approach would provide the ability to optimize the measures to implement in each evaluation reach. This could decrease cost and increase acceptability at the local level. Data needs and studies that would need to be completed during design would include cultural resources, topography, land use information, ground water studies, interior drainage, and geotechnical studies. The most likely NEPA document required would be an Environmental Assessment. The inability to find a local sponsor capable of funding the non-federal portion of the project could prevent timely implementation. Implementability of some level of embankment raise is considered to be high.

Conclusion: This alternative meets the primary purpose of the project. This alternative should be carried over for detailed evaluation.

MODIFY ELEVATIONS AT TOLNA COULEE

Effectiveness

The effectiveness of this alternative is dependent on the elevation at which the sill elevation is set at Tolna Coulee. The maximum existing channel inlet elevation in Tolna Coulee is currently 1459 feet. Lowering the existing elevation to 1457, would have a small but measurable effect on embankment design considerations needed to meet Corps of Engineers dam safety criteria. A preliminary analysis (Attachment 1) indicates that excavation of a 300-foot wide channel at elevation 1457 would result in a reduction of 0.2 feet from a required intermediate Top of Embankment elevation of 1465, but could reduce the eventual maximum Top of Embankment elevation by as much as 1.5 feet. Analysis also indicates that Tolna Coulee would have to be lowered to at least elevation 1452 to preclude the need for any additional embankment raises at the City of Devils Lake. Effectiveness for this alternative is considered to be low.

Environmental Effects

Natural Resources: Effects associated with embankment construction or relocation could be reduced or avoided depending on the overflow elevation. Overflow events would have an effect of freshening water in Devils Lake, which would benefit the lake fishery. An overflow event could have significant effects on the Sheyenne River with respect to the fishery, erosion, water quality, and ground water. The magnitude of effects would be dependent on the quantity, duration and frequency of discharge events over the lowered outlet. There would be an increased potential for biota transfer from Devils Lake to the Sheyenne River. Lowering the overflow elevation from 1459 to 1457 would increase the probability of an overflow by the year 2040 from about 6 percent to around

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11 percent. Implementation of this alternative would likely include an extensive mitigation and monitoring plan.

Cultural Resources: High potential for adverse effects on cultural resources along Tolna Coulee and the Sheyenne River through erosion, inundation, or deposition.

Overall, the potential environmental effects of this alternative is considered to be high adverse.

Social Effects

While there would be positive effects in and around Devils Lake, there would be the potential for significant adverse downstream effects for recreation, public health, land use, agriculture, public services, and controversy. Adverse downstream effects include impairments to environment, irrigation, increased flooding, and increased water treatment costs up to and beyond the Canadian border. This alternative is highly controversial and is among the primary issues argued by upstream and downstream interests. If lowered sufficiently, it could preclude the need for raise of embankments at the City Devils Lake. Saving of these costs would offset to some degree by downstream impacts that would require compensation / mitigation. Controversy would intensify as upstream interests would be perceived as "winners" at the expense of downstream interests.

Overall potential social effects are considered to be high adverse.

Acceptability

Other States, Nations and Tribal Resources: There are significant institutional constraints associated with this alternative. This alternative would be viewed as an outlet from Devils Lake. Minnesota and Canada have opposed previous outlet proposals due to water quality and biota transfer concerns. In particular, the issue has been raised that in the absence of extensive treatment of water discharged from Devils Lake, such actions would violate the international Boundary Waters Treaty. Recent correspondence from Manitoba reiterated their concerns with and opposition to this alternative. The Spirit Lake Nation has expressed concerns with outlet proposals from Devils Lake in the past.

Because of the known institutional constraints and potential controversy, the acceptability of this alternative is considered to be low.

Risk

Actual mitigation costs are likely to be higher than those used for this analysis. Previous studies assumed that the freshest water was being pumped from Devils Lake, filtered and operated in a manner that would not induce additional flooding on the Sheyenne River. There may be a risk that the operation of an overflow structure would be curtailed due to downstream environmental considerations. The project may generate lawsuits from downstream interests resulting in limitations on overflow structure operations. Cost

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effectiveness would be compromised and an embankment raise at the City of Devils Lake would have to be reconsidered as a solution.

Overall risk associated with this alternative is considered to be high.

Implementability

While all the options under this alternative may be technically feasible, environmental, social, legal and institutional constraints make the federal implementation of this alternative unlikely in the near future. Issues raised during the planning and analysis of federally proposed outlet from Devils Lake would need to be addressed. An outlet from the east end of Devils Lake would require updated studies/modeling for water quality, hydrology, hydraulics, geotechnical, land use, topography, cultural resources, biota studies, and international/inter-state coordination. An operation plan for any control structure would also need to be developed. The most likely NEPA document required would be an Environmental Impact Statement.

The Implementability of this alternative is considered to be low.

Conclusion: Due to the potential for significant environmental and social impacts, and the significant institutional constraints that would affect potential implementation, this alternative should not be carried over for detailed evaluation.

UPPER BASIN STORAGE

Effectiveness

Numerous programs have been used to pursue storage in the upper basin with various degrees of success from year to year. These include programs by the USFWS, NRCS, and various State programs. In 2003 these programs restored/protected/enhanced about 14,000 acres of wetlands and provided about 10,000 acre feet of storage. In addition, an experimental irrigation program to utilize water before it reaches Devils Lake has been ongoing for the last several years. Their effect on runoff into Devils Lake varies, depending in the prevailing conditions going into winter and the amount of storage available in any given basin during storm events. In any event Devils Lake did continue to rise and eventually equalize with Stump Lake. The effectiveness of this alternative is dependent on the amount of drained depressions that could be enrolled in an upper basin storage program. The Devils Lake Upper Basin Storage Evaluation of 2001 (or WEST Study as it is referred to by many) that was completed as part of the DL IPR-EIS estimated that the restoration of 39,000 acres would provide 63,600 acre feet of storage. The study concluded that under the Wet Scenario, the result would be an average annual runoff reduction of almost 16,000 acre feet. (For modeling purposes, the Wet Scenario was defined as a repetition of the climatic and hydrologic conditions of the seven highest inflow years in recent history (1993-1999) over the period from 2003-2035.) This would equal about 1.3 inches at lake elevation 1450. The scope of work required would

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encompass restoration of approximately 6,700 drained depressions through construction of berms, gated structures, and tie backs to high ground.

There is some disagreement on the number of drained depressions that currently exist in the upper basin and the estimated effectiveness of wetland restoration. U.S Fish and Wildlife comments on the DL IPR-EIS expressed a concern that the number of drained depressions calculated by the Devils Lake Upper Basin Storage Evaluation in 2001 underestimated the amount by at least 50 percent. This issue has been disputed. In addition, they noted that the Upper Basin Storage Evaluation documentation identified that the hydrologic model may underestimate net total evaporation. Given these concerns, and in lieu of additional studies for this evaluation, some changes in assumptions on effectiveness may be warranted.

As the primary purpose of this project is to focus on management of the risk to public safety and flood damages in the City of Devils Lake, the following considerations were identified when evaluating the upper basin storage alternative.

Preliminary analyses indicate the City of Devils Lake embankments will need to safely contain over 1.4 million acre feet of storage to meet dam safety criteria. Based on the existing lake elevation (1447 ft. in May 2008), the City of Devils Lake embankments currently provide protection to contain approximately 1.4 million acre feet of storage. For comparison purposes, the increase in lake volume between 1993 and 1999 was approximately 1.9 million acre feet. Hypothetically, if 40,000 acres of drained depression restoration were doubled to 80,000 acres, and the effectiveness of reducing average annual runoff were doubled (resulting in an average annual runoff reduction of 64,000 acre feet), the reduction in required storage to meet dam safety criteria would be less than 5 percent.

Upper basin storage does have the potential to change the timing and probabilities of increased lake levels. However, with the potential for acceleration in a lake level rise, as observed between 1993 and 1999, upper basin storage would not preclude the need to implement flood risk management actions at the City of Devils Lake should the lake level continue to rise. Overall effectiveness of this alternative is considered low.

Environmental Effects

Natural Resources: Wetland habitat would be greatly enhanced. There would be reduced sedimentation and turbidity downstream of restored areas with associated benefits to natural resources. Waterfowl and the wildlife habitat in the upper basin area would be greatly enhanced with the restoration of 40,000 acres of wetland. There is a risk of potential soil salinization due to raising the water table in areas adjacent to the restored wetland and mobilizing subsoil salts. Previous studies indicate the potential hazard is low.

Cultural Resources: While historic literature has provided dozens of leads to historic and architectural sites in the upper basin area, no detailed cultural surveys have been

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conducted. There is a limited potential for adverse effects on cultural resources at selected storage sites.

Overall potential environmental effects are considered to be high positive.

Social Effects

Due to the reduction and/or delaying of eventual peak lake elevation, there would be generally minor positive effects to most social and economic effects categories compared to without-project condition. This plan is controversial in that it is not accepted locally and is not effective as a primary alternative in reducing lake level. It is, however, seen by downstream interests as the solution to the problem. An adverse impact is the conversion of 40,000 acres of land, much of it in crop production, to runoff storage and the subsequent loss of income to the local economy. This plan is viewed primarily as a measure to be implemented in combination with other protection measures, not as a stand alone project. Impact on the lake is generally viewed as a delay of eventual rise not as a preventive measure. Some decrease in agricultural production would be expected as well as related effects on the local economy due to reduced farm expenditures.

Overall potential social effects are considered low adverse.

Acceptability

Other States, Nations and Tribal Resources: Similar to the Future Without Project conditions.

As noted in the discussion on social effects, acceptability of this alternative varies base on location in the basin. Overall acceptability is considered to be moderate.

Risk

Although timing may change, actions would still be required at the City of Devils Lake. There is a risk that the climate of the region will turn "dry" and the investment to acquire runoff storage easements will not yield a positive return. There is also a risk that downstream stakeholders may be perceived as "winners" and conflict among the local community may deepen.

Overall risk associated with this alternative is considered to be high.

Implementability

There are no technical constraints that would prevent the implementation of this alternative. However the large number of acres proposed may surface some concerns on the local level. It is uncertain at this time as to how this feature would be implemented (i.e. easements, fee title or a combination). Assuming the program would rely on willing/volunteer enrollees or sellers, implementation could take some time. This

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alternative may best be pursued under a variety of existing programs. Overall Implementability is considered to be low to moderate.

Conclusion: This alternative has the potential to result in significant positive effects on natural resources. Studies that would be required include cultural resources, topography, hydrology and hydraulic modeling to optimize storage location, soil salinization evaluations for recommended areas. Assuming the implementation of this alternative would involve willing enrollees and sellers, the most likely NEPA document required would be an Environmental Assessment. If wet conditions persist in the basin, it is unlikely that this alternative would preclude the need for taking action at the City of Devils Lake. It is recommended that this alternative not be carried over for detailed analysis.

RECOMMENDATION

The following alternatives are recommended for further evaluation: (1) Raise/Extend Existing Embankment at Devils Lake, and (2) Combination Embankment Raise/Extension and Relocation. The alternatives of Relocation, Modify Elevations at Tolna Coulee and Upper Basin Storage are not recommended for further evaluation as part of this project.

REFERENCES

- Devils Lake Basin Joint Water Resources Board and North Dakota State Water Commission, 2006. Devils Lake basin watershed management plan. 47pp.
- ND SWC Memorandum dated August 14, 2003. Prepared by Michael S. Noone, Subject – Wetland restoration information for the Devils Lake basin.
- U.S. Army Corps of Engineers, 2003. Final-Devils Lake North Dakota integrated planning report and environmental impact statement – volumes 1 and 2.
- West Consultants Inc., 2001. Devils Lake upper basin storage evaluation. Prepared for the U.S. Army Corps of Engineers - St. Paul District, 79pp.

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Table 2: Alternative Screening Matrix

ALTERNATIVE	FIRST COST (MILLIONS)	SCREENING CRITERIA					RISK	RECOMMENDATION
		EFFECTIVENESS	ENVIRONMENTAL	SOCIAL EFFECTS	ACCEPTABILITY	IMPLEMENTABILITY		
Raise/Extend Existing Embankment	\$ 100 - 200	High	Low Adverse	Moderate Positive	High	High	Low	Carry Forward
Relocation	\$ 400	High	Low Adverse	High Adverse	Moderate-Low	Moderate-Low	High	Drop
Raise/Extend - Relocation	\$ 100 - 200	High	Low Adverse	Moderate Positive	High	High	Low	Carry Forward
Modify Tohla Coulee	\$ 110 - 200	Low	High Adverse	High Adverse	Low	Low	High	Drop
Storage	\$ 54	Low	High Positive	Low Adverse	Moderate	Moderate-Low	High	Drop

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ATTACHMENT 1

Preliminary H&H Evaluation

Attachment 1

Devils Lake Flood Risk Management Project
Summary of
Preliminary Hydrologic and Hydraulic Analysis
Tolna Coulee Outlet

Description

A preliminary hydrologic and hydraulic (H&H) analysis has been completed to estimate the effects of lowering the Tolna Coulee outlet on required top of embankment elevations. The analysis addresses only the H&H component and does not encompass the political, legal, environmental, social, etc... aspects associated with lowering of the coulee. The purpose of this document is to provide a brief summary of the analysis and results. Due to the preliminary nature of the analysis a detailed hydrologic and hydraulic appendix has not been completed.

Conclusions

Although the hydrologic and hydraulic (H&H) analysis is preliminary, the results provide an accurate estimate of the effects of lowering the coulee on the required top of embankment elevations. A preliminary analysis indicates that excavation of a 300-foot wide channel at elevation 1457 ft. would result in a reduction of 0.2 feet from a required intermediate Top of Embankment elevation of 1465 ft., but could reduce the eventual ultimate Top of Embankment elevation by as much as 1.5 feet. Analysis also indicates that the sill elevation at Tolna Coulee would have to be lowered to at least elevation 1452 ft. to preclude the need for any additional embankment raises at the City of Devils Lake.

Currently, the United States Geological Survey estimates there is approximately a 6 percent probability that Devils Lake will exceed the elevation of 1459 ft., a 11 percent probability of exceeding 1457 ft., and a 37 percent probability of exceeding 1452 ft. by year 2040 .

Erosion of the natural outlet in comparison to a reinforced outlet with matching geometry would result in a reduction of 0.6 feet in the required ultimate top of embankment elevation. The lake elevation would recede following an erosive event resulting in an outlet elevation possibly as low as 1450 ft. Based on evidence and data from a Tolna Coulee Outlet Erosion study completed in 2001 for the U.S. Army Corps of Engineers, a substantial event or sequence of events resulting in lake elevations in the range of 1460.75 ft. would be required for severe erosion to occur. For an inflow design flood, based on dam safety criteria, outlet discharges would be in excess of 15,000 cubic feet per second with over 900,000 cubic yards of material being eroded from Tolna Coulee.

Hydrologic Analysis Overview

The preliminary hydrologic analysis has been completed using data adopted from past studies and projects in the Devils Lake Basin. Further analysis on the Devils Lake Flood Risk Management project will include evaluation, and modification as necessary, of data from past studies to ensure that the most appropriate methodology is applied in the hydrologic design of the project.

Preliminary data adapted from a U.S. Army Corps of Engineers planning report (Reference 1) indicates that the City of Devils Lake embankments will be required to safely contain between 1.45 and 2.9 million acre feet of inflow volume to meet dam safety criteria. The dam safety analysis has not yet been completed to determine the appropriate volume in the range between 1.45 and 2.9 million acre feet of storage. An inflow duration of four months with a triangular distribution was also adopted for the inflow design event from previous studies.

Hydraulic Analysis Overview

A hydraulic model has been developed by updating a U.S. Army Corps of Engineers (USACE) hydraulic model of Tolna Coulee, developed in 1997, with the most recent available survey data obtained from the North Dakota State Water Commission (NDSWC). The hydraulic model is preliminary and has not been developed to design standards. A final design of outlet alternatives would require more detail and evaluation of channel characteristics (channel slope, area, base width, channel resistance, side slopes). Elevation-discharge outflow rating curves were then developed for the existing conditions and excavated outlet geometries.

The initial condition water surface elevations, inflow hydrographs and elevation-storage-outflow curves were entered into a visual basic program to calculate resulting water surface elevations for the existing conditions and excavated alternatives.

Dam safety criteria specifies that freeboard will be five feet or greater as determined by considerations that failure of the dam will not result from wind set-up, wave action, uncertainties in analytical procedures, and uncertainties in project function in combination with the most critical pool elevation. For the purpose of this analysis, the "freeboard", which is the required embankment height above the critical pool elevation, is assumed to be the minimum required five feet. The critical pool elevation is the peak water surface elevation resulting from routing of the inflow hydrograph through Devils Lake as described in the hydrologic analysis overview.

1457 Alternative

The existing conditions geometry was modified with a 300-foot base width channel, cut to an invert elevation of 1457.0 ft. along the approximately 2,000 foot overflow profile.

A reduction of 0.2 feet in the required intermediate Top of Embankment elevation of 1465 ft. was computed for the 1457 alternative. The minimal reduction in the required top of embankment is due to the limited peak outlet capacity of the 1457 alternative at 1,075 cubic feet per second (2,130 acre feet per day) to evacuate, at a minimum, 1.45 million acre feet of inflow volume.

For ultimate top of embankment build elevations, the initial conditions water surface elevation prior to the flood event was assumed to be at the outflow elevation, which is 1459 ft. for existing conditions & 1457 ft. for the 1457 alternative. A maximum reduction of 1.5 feet was computed for the required ultimate Top of Embankment elevation resulting from the 1457 alternative. The reduction in the initial condition water surface elevation from 1459 ft. to 1457 ft. contributed to a reduction of 1.1 feet out of the 1.5 foot total reduction in the required top of embankment elevation. The remaining 0.4 feet is due to the increased outlet capacity.

Lowering of Tolna Coulee to Preclude the Need for Additional Embankment Raises

With the assumed minimum required "freeboard" of five feet and to preclude the need for additional embankment raises above 1460 ft., the maximum allowable critical pool elevation should not exceed an elevation of 1455 ft. Preliminary computations indicate that with a channel cut to 1446 ft. and an ogee spillway crest at 1452 ft., it is possible to evacuate 1.45 million acre feet of inflow volume with the critical pool elevation held below 1455 ft. However, the event outflow would be approximately 7,600 cubic feet per second.

Preliminary Erosion Analysis of the Tolna Coulee Outlet

A preliminary erosion analysis of the Tolna Coulee outlet has been completed to estimate the effects that erosion would have on water surface elevations and required top of embankment elevations on Devils Lake. Data on the outlet erosion characteristics and outlet rating curves has been obtained from previous studies. The preliminary analysis indicates that given the nature of the soils, should the lake rise to elevations in the range of 1460.75 ft., there is a high potential for severe erosion to occur. Assuming an initial lake elevation of 1459 ft., a flood event in the magnitude of 550,000 acre feet, which is comparable to the 1997 flood event, would be required for the lake to reach an elevation of 1460.75 ft. Currently, the United States Geological Survey estimates there is approximately a 2 percent probability that Devils Lake will exceed the elevation of 1460.75 ft. by year 2040. Devils Lake is estimated to have spilled to the Sheyenne River within the last 1,200 years and borings in the Tolna Coulee area indicate erosion did not appreciably occur at that time, which provides supporting evidence that a substantial event or sequence of events resulting in water surface elevations in the range of 1460.75 ft. would be required for severe erosion to occur.

In relation to dam safety criteria, the minimum possible inflow volume of 1.45 million acre feet was routed through Devils Lake with an initial lake elevation of 1459 ft. for with and without erosion conditions. The with erosion condition resulted in a 0.6 foot

17 JUNE 08

reduction in the peak water surface elevation and required ultimate top of embankment elevation. Discharges were in excess of 15,000 cubic feet per second, and over 900,000 cubic yards of material being was eroded from Tolna Coulee.

References

U.S. Army Corps of Engineers, St. Paul District, *Devils Lake, North Dakota Integrated Planning Report and Environmental Impact Statement*, Volume 2, Appendices A-F, April 2003.

ATTACHMENT 3

404(b)(1) Evaluation

**Section 404(b)(1) Evaluation
Devils Lake Embankment Raise – Phase I
Devils Lake, North Dakota**

I. PROJECT DESCRIPTION

A. Location - The proposed fill activity would take place near the City of Devils Lake in Ramsey County, North Dakota along a portion of the embankment in Creel Bay that provides flood protection to the city. An 8,800 foot reach of the embankment would be raised 5 feet. Two areas along the embankment will require the placement of fill in water (See figure 1).

B. General Description – The existing Creel Bay pump station is to be relocated as part of the embankment raise. The ponding area for the current Creel Bay pump station would be filled as the toe of the embankment is moved landward. The ponding area is about 1 acre in size. The construction of a new pumping station will require the construction of a new gatewell and a poured-in-place 38 foot x 18 foot concrete apron. The construction of a cofferdam in Devils Lake will be required to facilitate construction. The eventual design for the cofferdam is unknown at this time as it will be designed by the contractor selected to construct the project. The two most likely designs would be a sheet pile cell cofferdam or an earth cofferdam. Both are considered at this time as an acceptable approach, but the approach taken will be based on the contractor's determination of constructability and cost. This evaluation addresses the effects of the construction of an earth cofferdam, as it is the approach that would require the temporary placement of the maximum amount of fill. Preliminary cofferdam design assumes a 250 foot long by 10 foot high cofferdam, with 1V:3H sideslopes.

C. Authority and Purpose - Federal authority for this project is provided in Public Law 84-99, Flood and Coastal Storm Emergencies (33 U.S.C. 701n) (69 Stat. 186). The purpose of the project is to provide long-term emergency protection for the City of Devils Lake from rising lake levels.

D. General Description of Dredged or Fill Material

1. General Characteristics of Material - The fill material placed for the cofferdam would consist primarily of clean impervious fill and riprap. The fill material placed in the ponding area would to expand the embankment would consist primarily of clean impervious fill. A small portion of fill material placed in the ponding area would be clean granular material placed as part of the sand drain for the embankment. The material placed for the gatewell outlet apron would consist of clean aggregate fill and poured-in-place concrete.

2. Quantity of Material - The quantity of fill is based on the assumption of an average fill depth of 5 feet being required to fill the ponding area, and the assumption of a 250 foot long cofferdam constructed to elevation 1455 feet msl (NGVD29). The lake bed elevation at the toe of the existing embankment in this reach is 1445. Riprap would be placed on the water-ward side of

the cofferdam to provide protection against wave action. The quantities of various fill materials to fill the ponding area would be 6,000 cubic yards (cy) of impervious fill and 250 cy of sand. The quantities of fill for the cofferdam would be 3,500 cy of impervious fill, 800 square yards of geotextile, and 600 cy of riprap. The quantities of fill for the pump station gateway outlet apron would be 50 cy of poured-in-place concrete and 50 cy of aggregate.

3. Source of Material - Fill material would come from any of the four potential borrow areas that have been identified for the construction of the overall project. The areas are upland areas that currently in grassland/pasture or agricultural use. Riprap would come from an approved quarry.

E. Description of the Proposed Discharge Sites

1. Location - The ponding area to be filled is adjacent to the Creel Bay pump station that will be removed as part of the project. The new pump station is located about 200 feet from the existing boat landing. The cofferdam would consist of an arch that goes from toe- toe on the embankment to facilitate the construction of pump station gateway outlet apron.

2. Size - About 1 acre would be filled at the ponding area. The total area affected in the lake with construction of the cofferdam would be about 0.5 acre.

3. Type of Site - The fill activities would take place in a constructed ponding area that provides some aquatic habitat. The cofferdam would be constructed in an open water area about 5 feet deep at the toe of the existing embankment.

4. Types of Habitat - The ponding area provides some wetland habitat with emergent vegetation that has developed on the fringes of the pond. Shallow, open water habitat is present along the embankment in Creel Bay.

5. Timing and Duration - Fill activities could begin as early as October 2009, but will likely not be initiated until April 2010. Construction should be completed by October 2010.

F. Description of Disposal Method - The fill material would be moved and placed mechanically.

II. FACTUAL DETERMINATIONS

A. Physical Substrate Determinations

1. Substrate Elevation and Slope - The depth of the existing ponding area is about 5 feet with a fairly uniform bottom elevation. The ponding area would be filled to approximately the existing ground elevation. The lake bottom elevation at the toe of the embankment is about 5 feet and fairly flat.

2. Sediment Type – The bottom of the ponding area is primarily clay. The lake bottom until is a mix of sand to silty clay. Until recently, the lake area adjacent to the embankment was considered upland until the lake elevation increased.

3. Dredged/Fill Material Movement - There would be no movement of fill placed in the ponding area. Geotextile and riprap would be placed on the waterward side of the cofferdam to minimize erosion from wave action.

4. Physical Effects on Benthos - Any organisms in the ponding area would be covered and eliminated. There would be some loss of benthos with the construction of the cofferdam but recolonization would be expected after the cofferdam is removed.

5. Actions Taken to Minimize Impacts – Best management practices would be instituted to prevent erosion from the site. Silt curtains would be used during the construction and removal of the cofferdam to limit the discharge of fines into the lake. Because the placement of the material would affect a small area and have minimal impacts, no additional special actions to minimize adverse impacts would be taken.

B. Water Circulation, Fluctuation, and Salinity Determinations

1. Water

a. Salinity - The fill activities would not affect salinity.

b. Water Chemistry - The use of clean fill material and mechanical placement procedures would preclude any adverse effects on water chemistry.

c. Clarity - Some minor, short-term decreases in clarity may occur during the placement of fill.

d. Color - The proposed fill activities should have no impact on water color.

e. Odor - The proposed fill activities should have no impact on water odor.

f. Taste - The proposed fill activities should have no impact on water taste.

g. Dissolved Gas Levels - The proposed fill activities should have no impact on dissolved gas levels in the water.

h. Nutrients - The proposed fill activities should have no impact on nutrient levels in the water.

i. Eutrophication - The proposed fill activities should have no impact on the level or rate of eutrophication of the water.

j. Temperature - The proposed fill activities would have no effect on water

temperature.

2. Current Patterns and Circulation

a. Current Patterns and Flow – The cofferdam would have no effect on the current and flow patterns in Creel Bay. Filling of the ponding area may cause some water to pond in the non-functional pilot channel for the old pump station.

b. Velocity - The proposed fill activities would have no effect on water velocity or flow.

c. Stratification - The proposed fill activities would have no effect on the development of stratified conditions in the lake or wetlands.

d. Hydrologic Regime - The proposed fill activities would have no impact on the hydrologic regime.

3. Normal Water Level Fluctuations - The proposed fill activities would have no effect on normal water level fluctuations.

4. Salinity Gradient - The fill activities would have no effect on the salinity gradient.

5. Actions Taken to Minimize Impact - Standard construction procedures utilizing best management practices to minimize erosion would be used.

C. Suspended Particulate/Turbidity Determination - There may be an increase in turbidity and suspended solids during construction and removal of the cofferdam. This would be a short-term impact until the fill material is stabilized.

1. Expected Changes in Suspended Particulates and Turbidity Levels in the Vicinity of the Disposal Site - Although minor temporary increases in suspended particulates and turbidity would occur in the immediate vicinity of the cofferdam during project construction, conditions would return to normal shortly after construction.

2. Effects on Chemical and Physical Properties of the Water Column - No effects are expected on light penetration, dissolved oxygen, toxic metals and organisms, pathogens, or the aesthetics of the water column after the project is in place.

3. Effects on Biota - Biota would be lost or displaced during the placement of the fill material.

4. Actions Taken to Minimize Impacts - Standard construction practices would be employed and permit conditions would be followed. Silt curtains would be used during the construction and removal of the cofferdam to limit the discharge of fines into the lake. Best

management practices would be employed to minimize erosion and sedimentation.

D. Contaminant Determinations - The fill material would be clean rock, fill and concrete and is not expected to introduce contaminants into the aquatic system. Neither the material nor its placement would cause relocation or increases of contaminants in the aquatic systems.

E. Aquatic Ecosystem and Organism Determinations - Approximately 1 acre of aquatic habitat would be permanently filled with the extension of the embankment toe. This loss would be offset with the construction of the slightly larger ponding area for the new pump station.

1. Effects on Plankton – The proposed action would have no appreciable effect on phytoplankton.

2. Effects on Benthos - Those benthic communities in the area of the proposed permanent fill activities would be eliminated. However, immigration of benthic organisms would occur, and the submerged portions of the fill would be recolonized.

3. Effects on Nekton - None expected.

4. Effects on Aquatic Food Web – The proposed action would have no appreciable long-term effect on total productivity of the area.

5. Effects on Special Aquatic Sites - The ponding area to be filled is a wetland that was created upon establishment of the ponding area.

6. Threatened and Endangered Species - No Federal or State listed species would be affected by the proposed action.

7. Other Wildlife - The fill activities would not result in the significant loss of aquatic or terrestrial habitat. The general diversity and productivity of the affected areas would be maintained.

8. Actions Taken to Minimize Impacts - The loss of the wetland at the ponding area would be offset with the construction of the slightly larger ponding area for the new pump station.

F. Proposed Disposal Site Determinations

1. Mixing Zone Determination - The proposed fill activity would have a minimal mixing zone. No further analysis of the mixing zone was made.

2. Determination of Compliance with Applicable Water Quality Standards – The proposed fill activity is expected to comply with all applicable state water quality standards. Water quality certification will be applied for from the State of North Dakota, and any imposed conditions would be complied with. Best management practices will be used to minimize the amount of suspended sediment.

3. Potential Effects on Human Use Characteristics - The proposed action would have no adverse effects on municipal or private water supplies, recreational or commercial fisheries, navigation, or aesthetics, parks, national historic monuments, refuges or similar preserves.

G. Determination of Cumulative Effects on the Aquatic Ecosystem - Implementation of the proposed action would cause no significant cumulative impact on the aquatic ecosystem.

H. Determination of Secondary Effects on the Aquatic Ecosystem - No significant secondary effects would be expected.

III. FINDING OF COMPLIANCE WITH RESTRICTIONS ON DISCHARGE

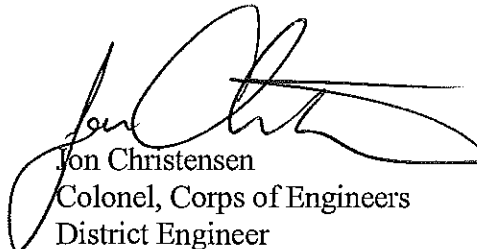
The proposed fill activity would comply with Section 404(b)(1) guidelines of the Clean Water Act. No significant adaptations to the guidelines were made for this evaluation. The proposed action represents the best combination of engineering, economic, and environmental considerations to provide long-term emergency protection to the City of Devils Lake, North Dakota. The placement of fill is required to provide the desired benefits, and the proposed alternative is the least environmentally damaging practicable alternative.

The proposed fill activity would comply with all State of North Dakota water quality standards, Section 307 of the Clean Water Act, and the Endangered Species Act of 1973, as amended. The proposed action would have no significant effects on human health and welfare, including municipal and private water supplies, recreational and commercial fishing, plankton, fish, wildlife, and special aquatic sites. No significant adverse effects on aquatic ecosystem diversity, productivity and stability, or on recreational, aesthetic, and economic values would occur.

Steps taken to minimize potential adverse effects on the aquatic ecosystem include stabilizing all above-water areas immediately after construction to minimize erosion, placing riprap in areas of high erosion potential, use of silt curtains during cofferdam construction and removal and using Best Management Practices to minimize erosion and sedimentation.

On the basis of this evaluation, I conclude that the proposed discharge complies with the Section 404(b)(1) Guidelines for the discharge of dredged or fill material.

9/08/2009
Date


Jon Christensen
Colonel, Corps of Engineers
District Engineer

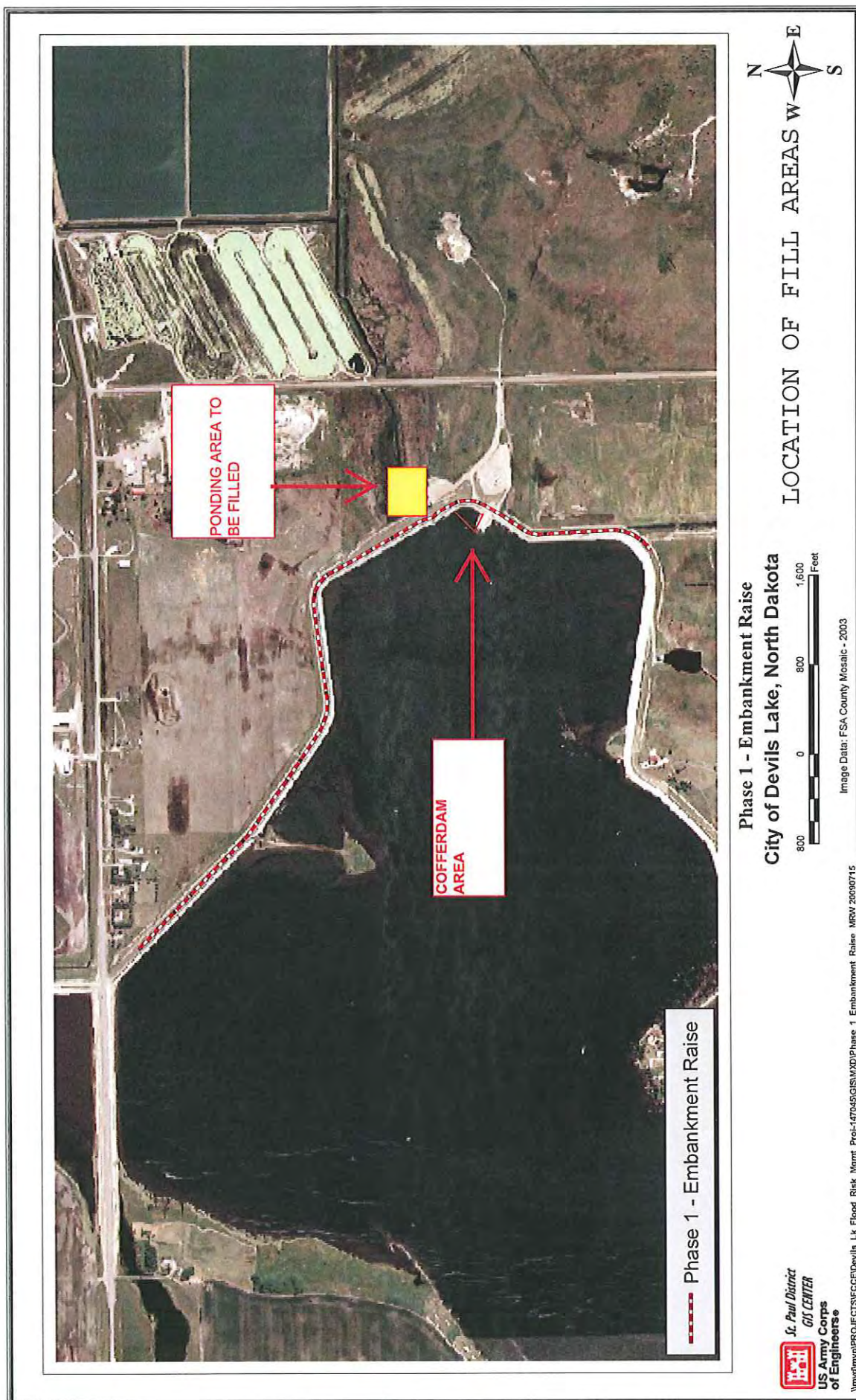


FIGURE 1

Old Ponding Area
To be Filled

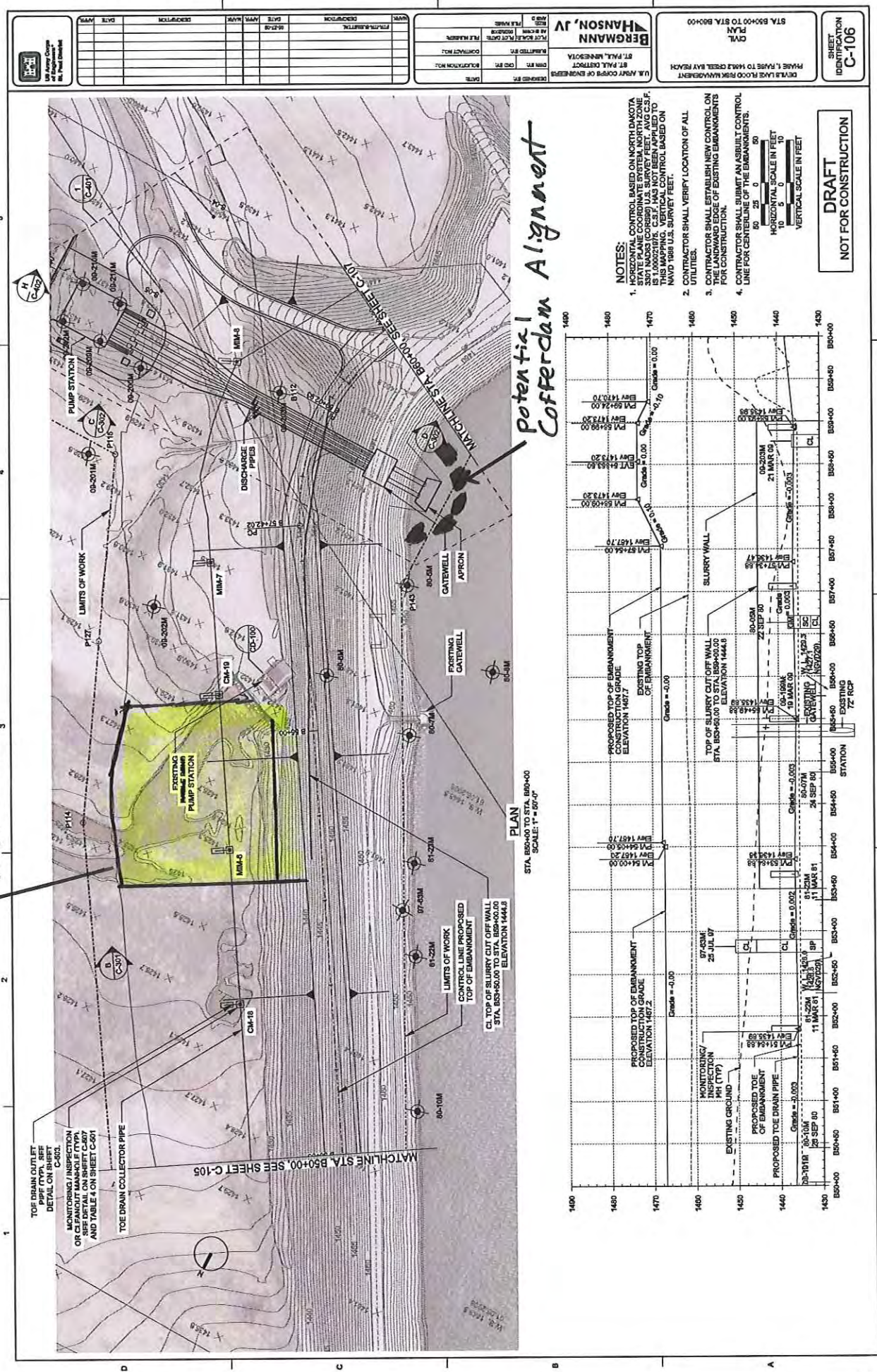


FIGURE 2

ATTACHMENT 4
CORRESPONDENCE



**STATE
HISTORICAL
SOCIETY
OF NORTH DAKOTA**

John Hoeven
Governor of North Dakota

North Dakota
State Historical Board

Albert I. Berger
Grand Forks - President

Chester E. Nelson, Jr.
Bismarck - Vice President

Gerold Gemtholz
Valley City - Secretary

A. Ruric Todd III
Jamestown

Diane K. Larson
Bismarck

Marvin L. Kaiser
Williston

Richard Kloubec
Fargo

Sara Otte Coleman
Director
Tourism Division

Kelly Schmidt
State Treasurer

Alvin A. Jaeger
Secretary of State

Douglass Prchal
Director
Parks and Recreation
Department

Francis Ziegler
Director
Department of Transportation

Merlan E. Paaverud, Jr.
Director

Accredited by the
American Association
of Museums

April 21, 2009

Virginia Gnabasik
Saint Paul District Archeologist
Environmental and Economic Analysis Branch
Department of the Army
St. Paul District, Corps of Engineers
Army Corps of Engineers Center
190 Fifth Street East
St. Paul, MN 55101-1638

NDSHPO REF. : 09-0706 COE Devils Lake Flood Management Project,
Ramsey County, North Dakota [Phase 1 and Phases 2-3]

Dear Virginia:

We have received and reviewed documentation for: 09-0706 COE Devils Lake Flood Management Project, Ramsey County, North Dakota [Phase 1 and Phases 2-3] by the methods and means outlined. We concur that no survey is warranted and we concur with "No Historic Properties Affected" determination for Phase 1 [Creel Bay alignment raise and new pump station, as outlined in correspondence] provided the project is of the nature stated and takes place in the location plotted in the correspondence.

In regard to Phase 2 [Lakewood Addition alignment], we have enclosed a map from NDCRS data bases showing sites and surveys in that locale for your information. Phase 2 (and Phase 3) has the potential to impact sites and we encourage further consultation as the project develops. Rip-rap and other material also are to be derived from an approved source for all the proposed raises [Phase 1 and Phases 2 and 3] as is indicated in the correspondence.

Thank you for the opportunity to review the project and to further consultation on it. If you have questions please contact either Susan Quinnell at (701) 328-3576 or squinnell@nd.gov or Paul Picha at (701) 328-3574.

Sincerely,

Merlan E. Paaverud, Jr.
State Historic Preservation Officer (North Dakota)
and
Director, State Historical Society of North Dakota
enc. as stated

24 April 2009

MEMORANDUM FOR RECORD

SUBJECT: Fish and Wildlife Service Coordination Act support for the Devils Lake Flood Risk Management Project

1. On 19 March I received a call from Terry Ellsworth of the US FWS Bismarck Field Office. He called to discuss their offices' capability to provide support as outlined in the draft Scope of Work that I had forwarded to their office in earlier in the year. Terry indicated that at this time, they did not have the capability to provide personnel for this work. However, he felt that the general issues, concerns outlined in the Coordination Act Report for the last raise/extension of the embankments at Devils Lake were still applicable. The primary issues of concern are potential effects on wetlands along the embankment alignment and on borrow sites. Terry noted that the potential effects on FWS easement lands associated with the use of borrow sites was a primary concern last time. If desired, he could check with other field offices to see if they could possibly provide assistance for Coordination Act activities.
2. I responded that I agreed that the issues identified during the previous embankment raise were essentially the same. One approach for us would be to just use the FWS Coordination Act Report that was used for that effort as a basis for identifying concerns. If it were acceptable, we would coordinate directly with the wetlands office in Devils Lake regarding the location of FWS Easement Lands and wetlands in the project area and base our analysis on that updated information. To keep the field office up to date we would provide embankment alignments for the extensions as they identified newsletters and any other key information as it is developed. We would also provide a preliminary draft EA to the Field Office for review to ensure that issues or concerns have been addressed.
3. Terry felt that the approach outlined above would be a good compromise at this time to ensure that FWS concerns are addressed.
4. I noted to Terry that construction may start as early as this summer for Phase I of the embankment raise. Phase I would involve the raising of the existing embankment in Creel Bay. The effects of this phase of the project on natural resources would primarily be associated potential borrow sites. I indicated I would provide a preliminary draft of the EA for Phase I of the embankment raise for his review, probably sometime towards the end of May.

Randall D Devendorf

Randall D. Devendorf
Wildlife Biologist
CEMVP-PM-E

Devendorf, Randall D MVP

From: Jim_Alfonso@fws.gov
Sent: Monday, July 27, 2009 11:49 AM
To: Devendorf, Randall D MVP
Cc: Greenleaf, Bonnie K MVP; Wolf, Gary C MVP; Terry_Ellsworth@fws.gov; Roger_Hollevoet@fws.gov
Subject: RE: Devils Lake embankment raise - Phase 1
Attachments: pic23805.gif; graycol.gif; ecblank.gif



pic23805.gif (1 KB) graycol.gif (169 B) ecblank.gif (109 B)

Randall: Yes, you can use my name as a contact person [(701)662-8611 ext. 327] and/or Paul Halko [(701)662-8611 ext. 323]. You might want to add in the language (or something like it) that where proposed borrow sites have U.S. Fish and Wildlife Service (Service) easements on them, it is imperative to coordinate with the Service prior to developing an excavation plan (and any excavation) so that an on-site visit can be completed to identify protected wetland basins and their watersheds. Adequate notice must be given to the Service so that the on-site visit can be completed in a timely manner commensurate with your construction schedule.

Let me know if you have questions.

Thanks!

Jim Alfonso

Devils Lake WMD
PO Box 908
221 2nd Street
Devils Lake, ND 58301
jim_alfonso@fws.gov
(701)662-8611 ext. 327
Inactive hide details for "Devendorf, Randall D MVP"
<randall.d.devendorf@usace.army.mil>"Devendorf, Randall D MVP"
<randall.d.devendorf@usace.army.mil>

"Devendorf, Randall D MVP" <randall.d.devendorf@usace.army.mil>

07/27/2009 09:53 AM

To

<Jim_Alfonso@fws.gov>

cc

"Greenleaf, Bonnie K MVP" <bonnie.k.greenleaf@usace.army.mil>, "Wolf, Gary C MVP" <Gary.C.Wolf@usace.army.mil>

Subject

RE: Devils Lake embankment raise - Phase 1

Jim:

- The boring crew did not schedule a time with you as the intent was to first see if the areas would provide suitable material for the embankment raise. The areas were tested and would meet the criteria for acceptable fill. We did not develop an excavation plan for any of the sites as that would be the responsibility of the contractor. - Not all of the potential borrow areas identified would be needed to provide enough fill to raise the Phase I embankments - While we did not eliminate the areas as being able to provide suitable fill, we did identify in the specifications that if the contractor proposed to use areas identified as having FWS easements on them, they would have to coordinate with FWS prior to excavation. I will ensure that the Engineering Considerations for the contract emphasize this also. Is there any specific language you would like included in the Engineering Considerations. Can I put your name in the Eng Considerations document as the contact for that?

- You are correct - Phase I does not include the airport reach.

Let me know if you have any questions - I make sure to send you a copy of the EA when it goes out the end of this week.

RDD

Randall D. Devendorf
Wildlife Biologist
U.S. Army, Corps of Engineers
St. Paul District

Phone: 651-290-5267
e-mail: randall.d.devendorf@usace.army.mil

-----Original Message-----

From: Jim_Alfonso@fws.gov [mailto:Jim_Alfonso@fws.gov]
Sent: Monday, July 27, 2009 9:18 AM
To: Devendorf, Randall D MVP
Cc: Terry_Ellsworth@fws.gov; Roger_Hollevoet@fws.gov
Subject: RE: Devils Lake embankment raise - Phase 1

Hi Randall: I have a couple of points that I would like to bring up.

* Have you made any decisions on the borrow sites. At one time you told me that a team was coming out to look at the borrow sites and that they would contact me at that time. Has your team been out to look at the borrow sites yet? Two of the sites you are looking at have FWS easements on them and 2 do not.

* I assume from your map, phase I does not include the area by the airport, as it hinges on the wetland exchange FAA is pursuing with Towner Count Water Resource Board. Before that segment can be started the wetland exchange will have to be consummated. I have not heard any more on the progress of this wetland exchange.

Call or write if you have questions.

Thanks!!

Jim Alfonso

Devils Lake WMD
PO Box 908
221 2nd Street
Devils Lake, ND 58301
jim_alfonso@fws.gov
(701)662-8611 ext. 327
Inactive hide details for "Devendorf, Randall D MVP"
<randall.d.devendorf@usace.army.mil>"Devendorf, Randall D MVP"
<randall.d.devendorf@usace.army.mil>

"Devendorf, Randall D MVP"
<randall.d.devendorf@usace.army.mil>

07/24/2009 09:52 AM

To

<Terry_Ellsworth@fws.gov>

cc

<Jim_Alfonso@fws.gov>

Subject

RE: Devils Lake embankment raise - Phase 1

Terry/Jim:

Just wondering if you had any comments on the information I sent you last week?

Randy

Randall D. Devendorf
Wildlife Biologist
U.S. Army, Corps of Engineers
St. Paul District

Phone: 651-290-5267
e-mail: randall.d.devendorf@usace.army.mil

-----Original Message-----

From: Devendorf, Randall D MVP
Sent: Wednesday, July 15, 2009 4:02 PM
To: 'Terry_Ellsworth@fws.gov'
Cc: 'Jim Alfonso (Jim_Alfonso@fws.gov)'
Subject: Devils Lake embankment raise - Phase 1

Terry:

As you are aware, the Corps of Engineers is developing a plan to raise/extend the existing embankment system at Devils Lake to elevation 1465. The embankment extension alignments, design criteria or borrow areas not been

determined. An Environmental Assessment for the overall embankment improvement project is scheduled for distribution sometime this fall.

Due to the rapidly rising lake levels at Devils Lake this year, it is currently at elevation 1450.5, the Corps has determined that construction should be initiated as soon as possible to raise an 8,000 foot reach of the existing embankment along Creel Bay. This portion of the embankment system, because of its water-ward slopes and location, is very susceptible to wave run up, and requires a major modification of the existing pump stations. The work will involve raising the embankment 5 feet to elevation 1465 and extending the toe landward an average of 85 feet. In some areas the toe will need to be extended as much as 150 feet. The existing Creel Bay pump station will be relocated/enlarged. The Eagle Bend pump station will be removed and the interior drainage routed to the new larger Creel Bay pump station. A new inlet channel and holding pond will be constructed for the new pump station and the existing channel abandoned. The only fill being placed in the water will be the cofferdam needed in Devils Lake to allow for the construction of the new pump station outlet, and the filling of a portion of the holding pond for the old Creel Bay pump station as the toe of the embankment is extended landward.

Four potential borrow sites have been identified. Jim Alfonso has been very helpful in identifying FWS easement lands and potential issues. The Specs for the Phase 1 embankment raise have specified that if areas identified as having FWS easements are proposed for use, coordination with FWS will be required to develop an acceptable borrow plan.

In order to proceed with construction, I am currently working on getting an EA out that only addresses the effects associated with the Creel Bay embankment raise. The effects associated with the raising and extending the remaining 15 miles of embankment will be addressed in a more comprehensive NEPA document. The current schedule is for that document to be completed the first part of November.

Due to the disturbed nature of the proposed area of construction, effects on natural resource is expected to be minimal. The endangered whooping crane (*Grus americana*) is known to migrate through the area and Devils Lake is within the breeding range of the piping plover (*Charadrius melodus*). No critical habitat for either of these species is known to occur in the project reach. Therefore, ^{no} federally listed threatened or endangered species would be affected by the proposed embankment raise.

I know that when we talked earlier we agreed that I would send you the draft EA for your review and comment. I still intend to do that or the more comprehensive NEPA document. My schedule is to get this EA out to the public by the end of July - and I wanted to get something to you now.

Attached for your information is a map showing the Phase 1 reach and typical X-sections for the levee extension and new pump station. I have a pdf of the general plans but that is about a 10MB file. If you want me to send that let me know.

If you have any concerns, comments or see issues that need to be addressed, please let me know.

Randy

Randall D. Devendorf
Wildlife Biologist
U.S. Army, Corps of Engineers
St. Paul District
190 5th Street East
St. Paul, Mn 55101-1638

Phone: 651-290-5267
Fax: 651-290-5258
e-mail: randall.d.devendorf@usace.army.mil

Devendorf, Randall D MVP

From: Schumacher, John D. [jdschumacher@nd.gov]
Sent: Wednesday, July 22, 2009 4:19 PM
To: Devendorf, Randall D MVP
Subject: RE: Devils Lake embankment raise - Phase 1

Randy, Steve and I discussed this and have no comments to offer at this time.

John

John Schumacher
Resource Biologist
ND Game and Fish Dept
701.328.6321

-----Original Message-----

From: Devendorf, Randall D MVP [mailto:randall.d.devendorf@usace.army.mil]
Sent: Friday, July 17, 2009 11:22 AM
To: Dyke, Steve R.
Cc: Engelhardt, Bruce W.; Sauer, Mike T.
Subject: Devils Lake embankment raise - Phase 1

Steve:

As you may be aware, the Corps of Engineers is developing a plan to raise/extend the existing embankment system at Devils Lake to elevation 1465. The embankment extension alignments, design criteria or borrow areas have not been determined. An Environmental Assessment for the overall embankment improvement project is scheduled for distribution sometime this fall.

Due to the rapidly rising lake levels at Devils Lake this year, it is currently at elevation 1450.5, the Corps has determined that construction should be initiated as soon as possible (hopefully this fall) to raise an 8,000 foot reach of the existing embankment along Creel Bay. This portion of the embankment system, because of its water-ward slopes and location, is very susceptible to wave run up, and requires a major modification of the existing pump stations. The work will involve raising the embankment 5 feet to elevation 1465 and extending the toe landward an average of 85 feet. In some areas the toe will need to be extended as much as 150 feet. The existing Creel Bay pump station will be relocated/enlarged. The Eagle Bend pump station will be removed and the interior drainage routed to the new larger Creel Bay pump station. A new inlet channel and holding pond will be constructed for the new pump station and the existing channel abandoned. The only fill being placed in the water will be the cofferdam needed in Devils Lake to allow for the construction of the new pump station outlet, and the filling of a portion of the holding pond for the old Creel Bay pump station as the toe of the embankment is extended landward.

Four potential borrow site have been identified. Jim Alfonso has been very helpful in identifying FWS easement lands and potential issues. The Specs for the Phase 1 embankment raise have specified that if areas identified as having FWS easements are proposed for use, coordination with FWS will be required to develop an acceptable borrow plan.

In order to proceed with construction, I am currently working on getting an EA out that only addresses the effects associated with the Creel Bay embankment raise. The effects associated with the raising and extending the remaining 15 miles of embankment will be addressed in a more comprehensive NEPA document. The current schedule is for that document to be completed the first part of November.

Due to the disturbed nature of the proposed area of construction, effects on natural resource is expected to be minimal. The endangered whooping crane (*Grus americana*) is known to migrate through the area and Devils Lake is within the breeding range of the piping plover (*Charadrius melodus*). No critical habitat for either of these species is known to occur in the project reach. Therefore, no federally listed threatened or

endangered species would be affected by the proposed embankment raise. I don't believe any state listed species are in the Phase 1 area.

Attached for your information is a map showing the Phase 1 reach, the location of potential borrow areas and typical X-sections for the levee extension and new pump station. I have a pdf of the general plans but that is about a 10MB file. If you want me to send that let me know.

If you have any concerns, comments or see issues that need to be addressed, please let me know. The schedule is to get the EA addressing the Phase 1 work out to the public by the end of July. If you feel that you can not provide comments at this is time and will reserve any comments until the EA is out for public review, please send me an e-mail back so stating.

I apologize for the short notice - but it seems the conditions in Devils Lake is dictating process! Please don't hesitate to call if you have any questions!

Randy

Randall D. Devendorf
Wildlife Biologist
U.S. Army, Corps of Engineers
St. Paul District

Phone: 651-290-5267
e-mail: randall.d.devendorf@usace.army.mil



DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
SIBLEY SQUARE AT MEARS PARK
190 FIFTH STREET EAST, SUITE 401
ST. PAUL MN 55101-1638

July 31, 2009

Planning, Programs, and Project Management Division
Environmental and Economic Analysis Branch

SUBJECT: Devils Lake Embankment Raise – Phase I at Devils Lake, North Dakota

Dear Interested Parties:

Enclosed for your review are the Draft Environmental Assessment and Finding of No Significant Impact (FONSI) for the Devil Lake Embankment Raise - Phase I, at Devils Lake, North Dakota. The project would consist of a 5-foot raise of approximately 8,800 feet of the existing embankment along Creel Bay and the construction of a new pump station to replace two smaller pump stations in the area.

We are distributing this report to concerned agencies, interest groups and individuals for review. If you have any comments on the proposed action, please provide them by August 31, 2009.

The Section 404(b)(1) evaluation is being distributed as part of this report in lieu of a separate Section 404 public notice. Anyone may request a public hearing on this project. The request must be submitted in writing to the District Engineer within 15 working days of the date of this letter. The request must clearly state the interest that the project would affect and how the project would affect that interest. All requests for a hearing and comments on the document will become an official part of the project file and will be available for public examination.

If you have any questions about the project, please contact Randy Devendorf of my staff at (651) 290-5267 (email: Randall.D.Devendorf@usace.army.mil).

Please address all correspondence on this project to the Chief, Environmental and Economic Analysis Branch, St. Paul District, Corps of Engineers, 190 Fifth Street East, Suite 401, St. Paul, Minnesota, 55101-1638.

Sincerely,

A handwritten signature in black ink, appearing to read "Terry J. Birkenstock", is located below the "Sincerely," text.

Terry J. Birkenstock
Chief, Environmental and Economic
Analysis Branch

Enclosure



DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
SIBLEY SQUARE AT MEARS PARK
190 FIFTH STREET EAST, SUITE 401
ST. PAUL MN 55101-1638

JUL 31 2009

Planning, Programs, and Project Management Division
Environmental and Economic Analysis Branch

Mr. Perry Brady
Tribal Historic Preservation Officer
Mandan, Hidatsa and Arikara Nation
P.O. Box 429
Parshall, North Dakota 58770

Dear Mr. Brady:

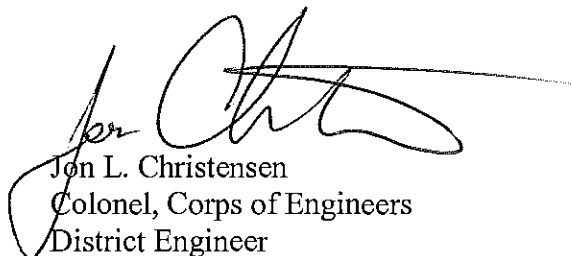
Enclosed for your review are the Draft Environmental Assessment and Finding of No Significant Impact (FONSI) for the Devil Lake Embankment Raise - Phase I, at Devils Lake, North Dakota. The project would consist of a 5-foot raise of approximately 8,800 feet of the existing embankment along Creel Bay and the construction of a new pump station to replace two smaller pump stations in the area.

We ask that you review these documents and return your comments to us by August 31, 2009. If we have not received your comments by that time, we will assume that you concur with our findings, and we will sign the FONSI.

If you have any questions about the project, please contact the Project Manager, Bonnie Greenleaf, at (651) 290-5476 (Bonnie.K.Greenleaf@usace.army.mil).

Please address all correspondence on this project to the Chief, Environmental and Economic Analysis Branch, St. Paul District, Corps of Engineers, 190 Fifth Street East, Suite 401, St. Paul, Minnesota, 55101-1638.

Sincerely,


Jon L. Christensen
Colonel, Corps of Engineers
District Engineer

Enclosure



DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
SIBLEY SQUARE AT MEARS PARK
190 FIFTH STREET EAST, SUITE 401
ST. PAUL MN 55101-1638

JUL 31 2009

Planning, Programs, and Project Management Division
Environmental and Economic Analysis Branch

Mr. Brady Grant
Tribal Historic Preservation Officer
Turtle Mountain Band of Chippewa
P.O. Box 900
Belcourt, North Dakota 58316

Dear Mr. Grant:

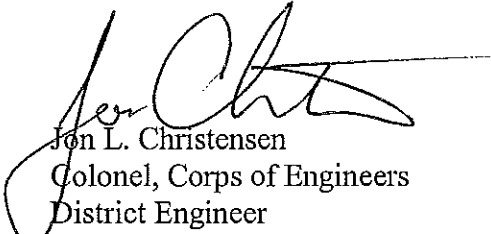
Enclosed for your review are the Draft Environmental Assessment and Finding of No Significant Impact (FONSI) for the Devil Lake Embankment Raise - Phase I, at Devils Lake, North Dakota. The project would consist of a 5-foot raise of approximately 8,800 feet of the existing embankment along Creel Bay and the construction of a new pump station to replace two smaller pump stations in the area.

We ask that you review these documents and return your comments to us by August 31, 2009. If we have not received your comments by that time, we will assume that you concur with our findings, and we will sign the FONSI.

If you have any questions about the project, please contact the Project Manager, Bonnie Greenleaf, at (651) 290-5476 (Bonnie.K.Greenleaf@usace.army.mil).

Please address all correspondence on this project to the Chief, Environmental and Economic Analysis Branch, St. Paul District, Corps of Engineers, 190 Fifth Street East, Suite 401, St. Paul, Minnesota, 55101-1638.

Sincerely,


Jon L. Christensen
Colonel, Corps of Engineers
District Engineer

Enclosure



DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
SIBLEY SQUARE AT MEARS PARK
190 FIFTH STREET EAST, SUITE 401
ST. PAUL MN 55101-1638

JUL 31 2009

Planning, Programs, and Project Management Division
Environmental and Economic Analysis Branch

Ms. Myra Pearson
Chairwoman
Spirit Lake Tribal Council
P.O. Box 359
Fort Totten, North Dakota 58335

Dear Chairwoman Pearson:

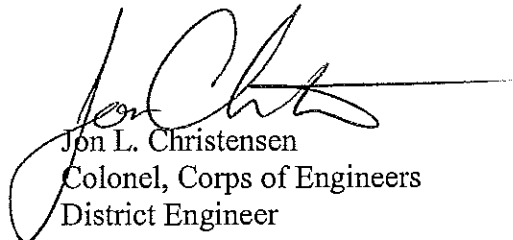
Enclosed for your review are the Draft Environmental Assessment and Finding of No Significant Impact (FONSI) for the Devil Lake Embankment Raise - Phase I, at Devils Lake, North Dakota. The project would consist of a 5-foot raise of approximately 8,800 feet of the existing embankment along Creel Bay and the construction of a new pump station to replace two smaller pump stations in the area.

We ask that you review these documents and return your comments to us by August 31, 2009. If we have not received your comments by that time, we will assume that you concur with our findings, and we will sign the FONSI.

If you have any questions about the project, please contact the Project Manager, Bonnie Greenleaf, at (651) 290-5476 (Bonnie.K.Greenleaf@usace.army.mil).

Please address all correspondence on this project to the Chief, Environmental and Economic Analysis Branch, St. Paul District, Corps of Engineers, 190 Fifth Street East, Suite 401, St. Paul, Minnesota, 55101-1638.

Sincerely,


Jon L. Christensen
Colonel, Corps of Engineers
District Engineer

Enclosure



DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
SIBLEY SQUARE AT MEARS PARK
190 FIFTH STREET EAST, SUITE 401
ST. PAUL MN 55101-1638

July 31, 2009

Planning, Programs, and Project Management Division
Environmental and Economic Analysis Branch

SUBJECT: Devils Lake Embankment Raise – Phase I at Devils Lake, North Dakota

Dear Interested Parties:

Enclosed for your review are the Draft Environmental Assessment and Finding of No Significant Impact (FONSI) for the Devil Lake Embankment Raise - Phase I, at Devils Lake, North Dakota. The project would consist of a 5-foot raise of approximately 8,800 feet of the existing embankment along Creel Bay and the construction of a new pump station to replace two smaller pump stations in the area.

We are distributing this report to concerned agencies, interest groups and individuals for review. If you have any comments on the proposed action, please provide them by August 31, 2009.

The Section 404(b)(1) evaluation is being distributed as part of this report in lieu of a separate Section 404 public notice. Anyone may request a public hearing on this project. The request must be submitted in writing to the District Engineer within 15 working days of the date of this letter. The request must clearly state the interest that the project would affect and how the project would affect that interest. All requests for a hearing and comments on the document will become an official part of the project file and will be available for public examination.

If you have any questions about the project, please contact Randy Devendorf of my staff at (651) 290-5267 (email: Randall.D.Devendorf@usace.army.mil).

Please address all correspondence on this project to the Chief, Environmental and Economic Analysis Branch, St. Paul District, Corps of Engineers, 190 Fifth Street East, Suite 401, St. Paul, Minnesota, 55101-1638.

Sincerely,

A handwritten signature in black ink, which appears to read "Terry J. Birkenstock", is written over a horizontal line.

Terry J. Birkenstock
Chief, Environmental and Economic
Analysis Branch

Enclosure



DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
SIBLEY SQUARE AT MEARS PARK
190 FIFTH STREET EAST, SUITE 401
ST. PAUL MN 55101-1638

July 31, 2009

Planning, Programs, and Project Management Division
Environmental and Economic Analysis Branch

Mr. Larry Svoboda
NEPA Program Chief
EPA Region 8 (8EPR-N)
1595 Wynkoop Street
Denver, Colorado 80202-1129

Dear Mr. Svoboda:

Enclosed for your review are the Draft Environmental Assessment and Finding of No Significant Impact (FONSI) for the Devil Lake Embankment Raise - Phase I, at Devils Lake, North Dakota. The project would consist of a 5-foot raise of approximately 8,800 feet of the existing embankment along Creel Bay and the construction of a new pump station to replace two smaller pump stations in the area.

We ask that you review these documents and return your comments to us by August 31, 2009. If we have not received your comments by that time, we will assume that you concur with our findings, and we will sign the FONSI.

If you have any questions about the project, please contact Randy Devendorf of my staff at (651) 290-5267 (email: Randall.D.Devendorf@usace.army.mil).

Please address all correspondence on this project to the Chief, Environmental and Economic Analysis Branch, St. Paul District, Corps of Engineers, 190 Fifth Street East, Suite 401, St. Paul, Minnesota, 55101-1638.

Sincerely,

A handwritten signature in black ink, appearing to read "Terry J. Birkenstock", is located below the "Sincerely," text.

Terry J. Birkenstock
Chief, Environmental and Economic
Analysis Branch

Enclosure



DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
SIBLEY SQUARE AT MEARS PARK
190 FIFTH STREET EAST, SUITE 401
ST. PAUL MN 55101-1638

July 31, 2009

Planning, Programs, and Project Management Division
Environmental and Economic Analysis Branch

Mr. Jeffrey Towner
Field Supervisor
North Dakota Field Office
U.S. Fish and Wildlife Service
3425 Miriam Avenue
Bismarck, North Dakota 58501-7926

Dear Mr. Towner:

Enclosed for your review are the Draft Environmental Assessment and Finding of No Significant Impact (FONSI) for the Devil Lake Embankment Raise - Phase I, at Devils Lake, North Dakota. The project would consist of a 5-foot raise of approximately 8,800 feet of the existing embankment along Creel Bay and the construction of a new pump station to replace two smaller pump stations in the area.

We ask that you review these documents and return your comments to us by August 31, 2009. If we have not received your comments by that time, we will assume that you concur with our findings, and we will sign the FONSI.

If you have any questions about the project, please contact Randy Devendorf of my staff at (651) 290-5267 (email: Randall.D.Devendorf@usace.army.mil)

Please address all correspondence on this project to the Chief, Environmental and Economic Analysis Branch, St. Paul District, Corps of Engineers, 190 Fifth Street East, Suite 401, St. Paul, Minnesota, 55101-1638.

Sincerely,

Terry J. Birkenstock
Chief, Environmental and Economic
Analysis Branch

Enclosure

Copy furnished:
Mr. Jim Alfonso, Devils Lake WMD



DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
SIBLEY SQUARE AT MEARS PARK
190 FIFTH STREET EAST, SUITE 401
ST. PAUL MN 55101-1638

July 31, 2009

Planning, Programs, and Project Management Division
Environmental and Economic Analysis Branch

Mr. Mike Sauer
North Dakota Department of Health
1200 Missouri Avenue
Bismarck, North Dakota 58506

Dear Mr. Sauer:

Enclosed for your review are the Draft Environmental Assessment and Finding of No Significant Impact (FONSI) for the Devil Lake Embankment Raise - Phase I, at Devils Lake, North Dakota. The project would consist of a 5-foot raise of approximately 8,800 feet of the existing embankment along Creel Bay and the construction of a new pump station to replace two smaller pump stations in the area.

The Section 404(b)(1) evaluation is being distributed as part of this report in lieu of a separate Section 404 public notice. Anyone may request a public hearing on this project. The request must be submitted in writing to the District Engineer within 15 working days of the date of this letter. The request must clearly state the interest that the project would affect and how the project would affect that interest. All requests for a hearing and comments on the document will become an official part of the project file and will be available for public examination.

We request a water quality certification or waiver pursuant to the provisions of Section 401 of the 1977 Clean Water Act by August 31, 2009, or within 30 days of the receipt of this document, following your review.

If you have any questions about the project, please contact Randy Devendorf of my staff at (651) 290-5267 (email: Randall.D.Devendorf@usace.army.mil).

Please address all correspondence on this project to the Chief, Environmental and Economic Analysis Branch, St. Paul District, Corps of Engineers, 190 Fifth Street East, Suite 401, St. Paul, Minnesota, 55101-1638.

Sincerely,

Terry J. Birkenstock
Chief, Environmental and Economic
Analysis Branch

Enclosure

Copy furnished:
Mr. Dennis Fewless



DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
SIBLEY SQUARE AT MEARS PARK
190 FIFTH STREET EAST, SUITE 401
ST. PAUL MN 55101-1638

July 31, 2009

Planning, Programs, and Project Management Division
Environmental and Economic Analysis Branch

Mr. Steve Dyke
Conservation Supervisor
North Dakota Game and Fish Department
100 N. Bismarck Expressway
Bismarck, North Dakota 58501-5095

Dear Mr. Dyke:

Enclosed for your review are the Draft Environmental Assessment and Finding of No Significant Impact (FONSI) for the Devil Lake Embankment Raise - Phase I, at Devils Lake, North Dakota. The project would consist of a 5-foot raise of approximately 8,800 feet of the existing embankment along Creel Bay and the construction of a new pump station to replace two smaller pump stations in the area.

We are distributing this report to concerned agencies, interest groups and individuals for review. If you have any comments on the proposed action, please provide them by August 31, 2009.

The Section 404(b)(1) evaluation is being distributed as part of this report in lieu of a separate Section 404 public notice. Anyone may request a public hearing on this project. The request must be submitted in writing to the District Engineer within 15 working days of the date of this letter. The request must clearly state the interest that the project would affect and how the project would affect that interest. All requests for a hearing and comments on the document will become an official part of the project file and will be available for public examination.

If you have any questions about the project, please contact Randy Devendorf of my staff at (651) 290-5267 (email: Randall.D.Devendorf@usace.army.mil).

Please address all correspondence on this project to the Chief, Environmental and Economic Analysis Branch, St. Paul District, Corps of Engineers, 190 Fifth Street East, Suite 401, St. Paul, Minnesota, 55101-1638.

Sincerely,

A handwritten signature in black ink, appearing to read "Terry J. Birkenstock", is written over the typed name.

Terry J. Birkenstock
Chief, Environmental and Economic
Analysis Branch

Enclosure

Copy Furnished
Mr. Brian Prince



DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
SIBLEY SQUARE AT MEARS PARK
190 FIFTH STREET EAST, SUITE 401
ST. PAUL MN 55101-1638

July 31, 2009

Planning, Programs, and Project Management Division
Environmental and Economic Analysis Branch

Mr. Todd Sando
Assistant State Engineer
North Dakota State Water Commission
900 East Boulevard Avenue, Dept. 770
Bismarck, North Dakota 58505-0850

Dear Mr. Sando:

Enclosed for your review are the Draft Environmental Assessment and Finding of No Significant Impact (FONSI) for the Devil Lake Embankment Raise - Phase I, at Devils Lake, North Dakota. The project would consist of a 5-foot raise of approximately 8,800 feet of the existing embankment along Creel Bay and the construction of a new pump station to replace two smaller pump stations in the area.

We ask that you review these documents and return your comments to us by August 31, 2009. If we have not received your comments by that time, we will assume that you concur with our findings, and we will sign the FONSI.

If you have any questions about the project, please contact Randy Devendorf of my staff at (651) 290-5267 (email: Randall.D.Devendorf@usace.army.mil).

Please address all correspondence on this project to the Chief, Environmental and Economic Analysis Branch, St. Paul District, Corps of Engineers, 190 Fifth Street East, Suite 401, St. Paul, Minnesota, 55101-1638.

Sincerely,

A handwritten signature in black ink, appearing to read "Terry J. Birkenstock", is written over a horizontal line.

Terry J. Birkenstock
Chief, Environmental and Economic
Analysis Branch

Enclosure

Copy furnished:
Mr. Lee Klapprodt



**STATE
HISTORICAL
SOCIETY
OF NORTH DAKOTA**

John Hoeven
Governor of North Dakota

August 6, 2009

North Dakota
State Historical Board

Albert I. Berger
Grand Forks - President

Chester E. Nelson, Jr.
Bismarck - Vice President

Gerold Gerntholz
Valley City - Secretary

A. Ruric Todd III
Jamestown

Diane K. Larson
Bismarck

Marvin L. Kaiser
Williston

Richard Kloubec
Fargo

Sara Otte Coleman
Director
Tourism Division

Kelly Schmidt
State Treasurer

Alvin A. Jaeger
Secretary of State

Douglass Prchal
Director
Parks and Recreation
Department

Francis Ziegler
Director
Department of Transportation

Merlan E. Paaverud, Jr.
Director

Terry J. Birkenstock
Chief
Environmental and Economic Analysis Branch
Department of the Army
St. Paul District, Corps of Engineers
Army Corps of Engineers Center
190 Fifth Street East, Suite 401
St. Paul, MN 55101-1638


NDSHPO REF. : 09-0094 [also 09-0706], COE Devils Lake Flood
Management Project Embankment Raise, Ramsey County, North Dakota
[Phase 1] Draft FONSI

Dear Terry:

We have received and reviewed documentation for: 09-0094, COE Devils
Lake Flood Management Project Embankment Raise, Ramsey County, North
Dakota [Phase 1] Draft FONSI and have no comments at this time.

Thank you for the opportunity to review the project, and we look forward to
further consultation on Phases 2 and 3. If you have questions please contact
either Susan Quinnell at (701) 328-3576 or squinnell@nd.gov or Paul Picha at
(701) 328-3574.

Sincerely,

 Merlan E. Paaverud, Jr.
State Historic Preservation Officer (North Dakota)
and
Director, State Historical Society of North Dakota

Accredited by the
American Association
of Museums



NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
Gold Seal Center, 918 E. Divide Ave.
Bismarck, ND 58501-1947
701.328.5200 (fax)
www.ndhealth.gov



August 5, 2009

Terry J. Birkenstock
Chief, Environmental and Economic Analysis Branch
St. Paul District, Corps of Engineers
190 Fifth St. East, Suite 401
St. Paul, MN 55101-1638

Dear Mr. Birkenstock:

This Department has completed its review of your proposed project for the Devils Lake Embankment Raise - Phase I at Devils Lake, North Dakota.

We have no objection to the issuance of a Section 404 Permit. Furthermore, under Section 401 of the Clean Water Act, we hereby issue water quality certification for this project if our construction and environmental disturbance requirements (enclosed) are attached as a condition to the permit.

Sincerely,

Michael T. Sauer
Senior Scientist
Division of Water Quality

MTS:dlp

Encl.

xc: Dan Cimarosti, ND Regulatory Office, Bismarck



Construction and Environmental Disturbance Requirements

These represent the minimum requirements of the North Dakota Department of Health. They ensure that minimal environmental degradation occurs as a result of construction or related work which has the potential to affect the waters of the State of North Dakota. All projects will be designed and implemented to restrict the losses or disturbances of soil, vegetative cover, and pollutants (chemical or biological) from a site.

Soils

Prevent the erosion of exposed soil surfaces and trapping sediments being transported. Examples include, but are not restricted to, sediment dams or berms, diversion dikes, hay bales as erosion checks, riprap, mesh or burlap blankets to hold soil during construction, and immediately establishing vegetative cover on disturbed areas after construction is completed. Fragile and sensitive areas such as wetlands, riparian zones, delicate flora, or land resources will be protected against compaction, vegetation loss, and unnecessary damage.

Surface Waters

All construction which directly or indirectly impacts aquatic systems will be managed to minimize impacts. All attempts will be made to prevent the contamination of water at construction sites from fuel spillage, lubricants, and chemicals, by following safe storage and handling procedures. Stream bank and stream bed disturbances will be controlled to minimize and/or prevent silt movement, nutrient upsurges, plant dislocation, and any physical, chemical, or biological disruption. The use of pesticides or herbicides in or near these systems is forbidden without approval from this Department.

Fill Material

Any fill material placed below the high water mark must be free of top soils, decomposable materials, and persistent synthetic organic compounds (in toxic concentrations). This includes, but is not limited to, asphalt, tires, treated lumber, and construction debris. The Department may require testing of fill materials. All temporary fills must be removed. Debris and solid wastes will be removed from the site and the impacted areas restored as nearly as possible to the original condition.



North Dakota State Water Commission

900 EAST BOULEVARD AVENUE, DEPT 770 • BISMARCK, NORTH DAKOTA 58505-0850
701-328-2750 • TDD 701-328-2750 • FAX 701-328-3696 • INTERNET: <http://swc.nd.gov>

August 28, 2009

Terry J. Birkenstock
Chief, Environmental and Economic Analysis Branch
St. Paul District, Corps of Engineers
190 Fifth Street East, Suite 401
St. Paul, MN 55101-1638

Dear Mr. Birkenstock:

This is written in response to your letter dated July 31, 2009 requesting review of the Draft Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for the Devils Lake Embankment Raise-Phase I project located at Devils Lake ND.

State Water Commission (SWC) staff reviewed the Draft EA and FONSI and we concur with the Finding of No Significant Impact associated with the Devils Lake embankment raise project.

I would also like to take this opportunity to inform you that the project will need a construction permit and a sovereign land permit from the Office of the State Engineer. Both permit application forms can be obtained and downloaded from the SWC web site at: swc.state.nd.us/4dlink9/4dcgi/GetCategoryRecord/Permits.

In addition, the attached partial copy of Creel Township's Flood Insurance Rate Map dated June 20, 2001 depicts the floodplain where the embankment raise project is proposed. Prior to construction in the floodplain, the Army Corps of Engineers should apply for a non-building floodplain development permit to:

Dennis Skyberg, Floodplain Admin.
Creel Township
301 Eagle Bend
Devils Lake, ND 58301
Telephone 701-662-3272

Thank you for providing the opportunity to review the documents and to provide our comments.

Sincerely,

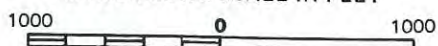
Todd Sando
Assistant State Engineer

TS:LW:ds/416-7
Enclosure

determine if flood insurance is available, contact an insurance agent or call the National Flood Insurance Program at (800) 8-6620.



APPROXIMATE SCALE IN FEET



NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

RAMSEY COUNTY,
NORTH DAKOTA AND
INCORPORATED AREAS

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CREEL, TOWNSHIP OF	380625	0330	D
DEVILS LAKE, CITY OF	380221	0330	D
UNINCORPORATED AREAS	380092	0330	D

MAP NUMBER
38071C0330 D

MAP REVISED:
JUNE 20, 2001

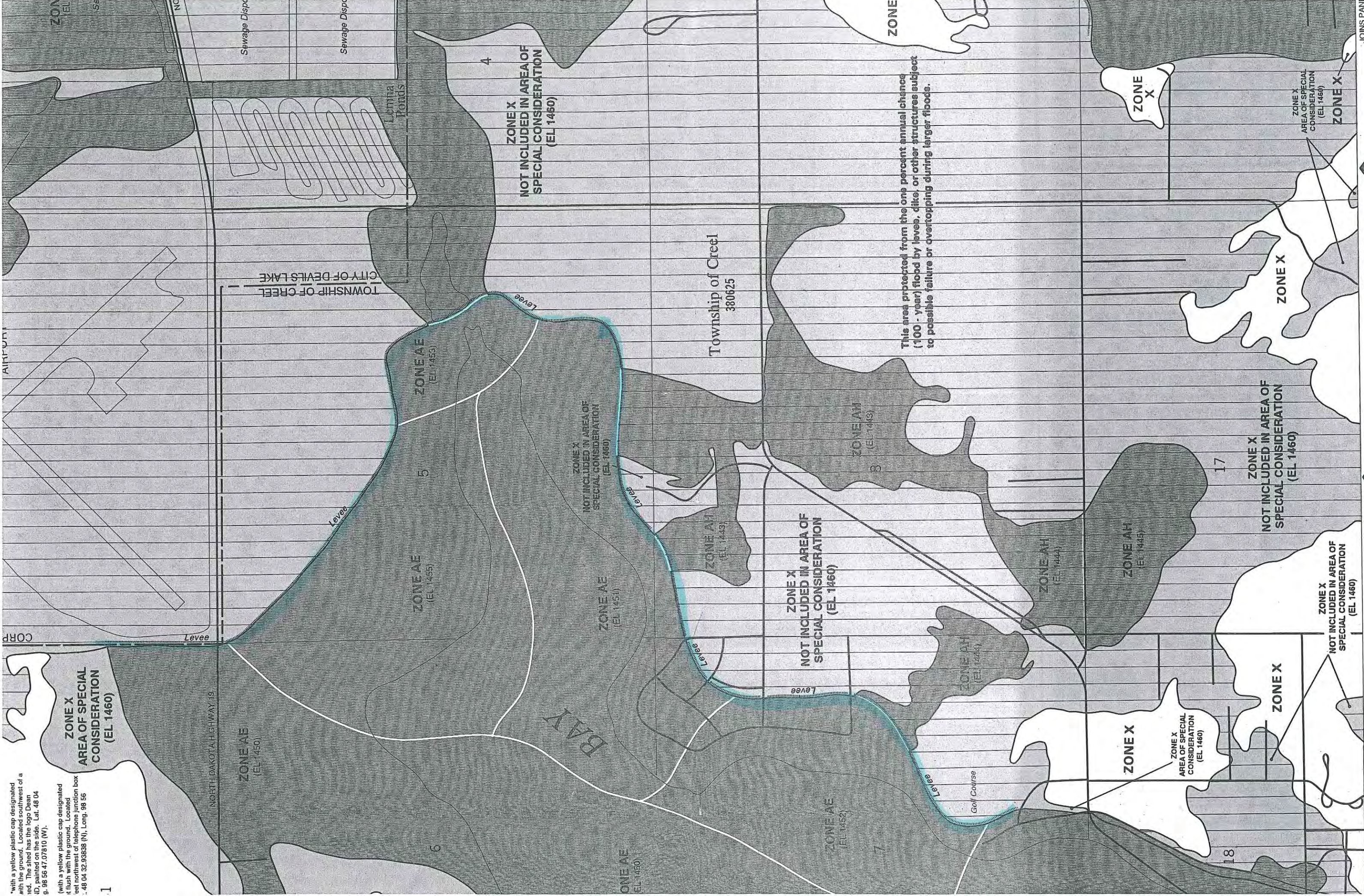


Federal Emergency Management Agency

*With a yellow plastic cap designated with the ground. Located southwest of a shed. The shed has the logo Dean ID, painted on the side. Lat. 48 04 32.93838 (N), Long. 98 56 47.07810 (W).

*With a yellow plastic cap designated with the ground. Located northwest of telephone junction box. Lat. 48 04 32.93838 (N), Long. 98 56 47.07810 (W).

1



NON-BUILDINGSITUATION
FLOODPLAIN DEVELOPMENT PERMIT APPLICATION

SECTION 1: GENERAL INFORMATION

PERMIT # _____

DATE: _____

Applicant: _____

Telephone # _____

Address: _____

Location of Proposed Development: _____

Legal description: _____

Contractor: _____

Telephone # _____

Address: _____

Estimated Cost of project: _____

\$ _____

FLOODPLAIN DETERMINATION (fill-in the appropriate information) :

Project is located: 100-year floodplain (Flood Fringe): _____

Regulatory Floodway: _____

Map information: FIRM Date: _____

FIRM Zone: _____

BFE at Development Site: _____ (MSL)

Development will be elevated to: _____ (MSL)

DEVELOPMENT ACTIVITIES: (check all that apply)

- ☐ Fill placement (fill brought in from outside the floodplain)
- ☐ Excavation (where subgrade fill is removed from the floodplain)
- ☐ Landscaping (cut and fill, fill borrow and placement)
- ☐ Construction or maintenance of a dike/levee/floodwall
- ☐ Removal of fill, embankment, or dikes
- ☐ Watercourse alterations (river, stream, lake - i.e. channel modifications, rip-rap)
- ☐ Road, street or bridge construction (new, repair or replacement, realignment)
- ☐ Drainage improvements (including culvert work)
- ☐ Mining (removal of gravel, rock, fill or other natural materials)
- ☐ Installation of utilities [water, sewer, pipeline, gas, electric, communication system(s)]
- ☐ Well drilling (i.e. water, oil, natural gas etc.)
- ☐ Subdivision (new or expansion)
- ☐ Other (please specify) _____

ADDITIONAL INFORMATION REQUIRED (attach additional information as needed):

- Comments or further explanation of work:
- Copies of project description, plans, blueprints, etc.
- Wetlands - will the activity impact identified wetlands?
- Will the development aggravate flooding elsewhere?

Please explain your answer.

OTHER PERMITS NECESSARY:

U.S. Army Corps of Engineers?
Water Resource District?

ELEVATION INFORMATION:

Attach information about the completed project elevations(s) with registered professional engineer or registered land surveyor certifications if part of the project:

SECTION 2: ACTION/APPROVAL:

The proposed development is in conformance with applicable community floodplain standards.

PERMIT IS APPROVED

(Conditioned on receiving as-built information/certification)

Signature (Floodplain Administrator): _____

Date: _____

ATTACHMENT 5

FONSI



DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
SIBLEY SQUARE AT MEARS PARK
190 FIFTH STREET EAST, SUITE 401
ST. PAUL MN 55101-1638

Planning, Programs and Project Management Division
Environmental and Economic Analysis Branch

FINDING OF NO SIGNIFICANT IMPACT

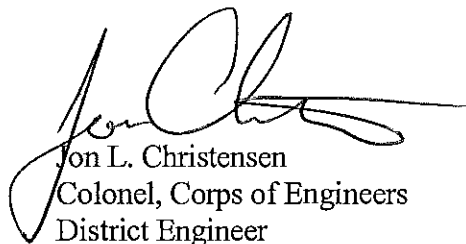
In accordance with the National Environmental Policy Act, the St. Paul District, Corps of Engineers, has assessed the environmental impacts of the following project:

DEVILS LAKE EMBANKMENT RAISE – PHASE I
DEVILS LAKE, NORTH DAKOTA

The purpose of this project is to provide long-term emergency protection to the city of Devils Lake, North Dakota. Protection would be provided by raising the existing embankment system 5 feet and constructing additional interior drainage facilities. The project is described in Section 3.00 of the Environmental Assessment. This Finding of No Significant Impact is based on the following factors: Phase I of the overall embankment raise project would not have significant or long-term impacts on natural resources and cultural resources; Phase I of the overall embankment project would have minor impacts on social resources; continued coordination will be maintained with appropriate agencies and individuals as planning for other phases of the project continues.

The environmental review process indicates that the proposed action does not constitute a major Federal action significantly affecting the quality of the human environment. Therefore, an Environmental Impact Statement will not be prepared.

9/08/2009
Date


Jon L. Christensen
Colonel, Corps of Engineers
District Engineer